FIG. 1

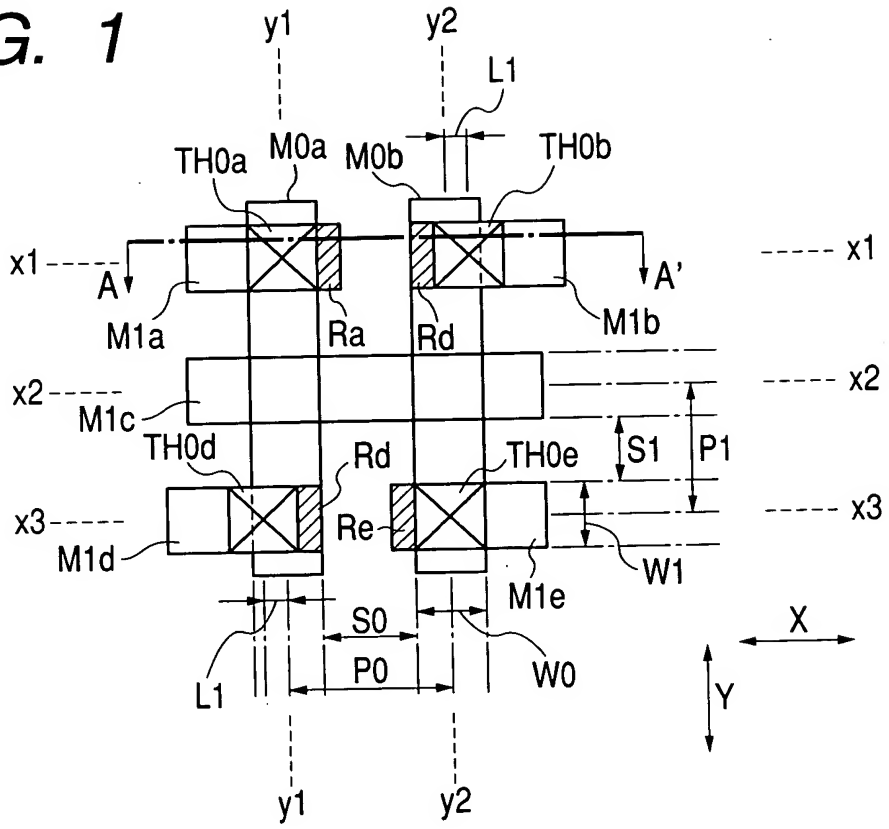

y1
y2
L1
TH0a
M0a
M0b
TH0b
x1
A
A'
x1
M1a
Ra
Rd
M1b
x2
x2
M1c
TH0d
Rd
TH0e
S1
P1
x3
x3
M1d
Re
W1
M1e
S0
X
P0
W0
L1
Y
y1
y2

FIG. 2

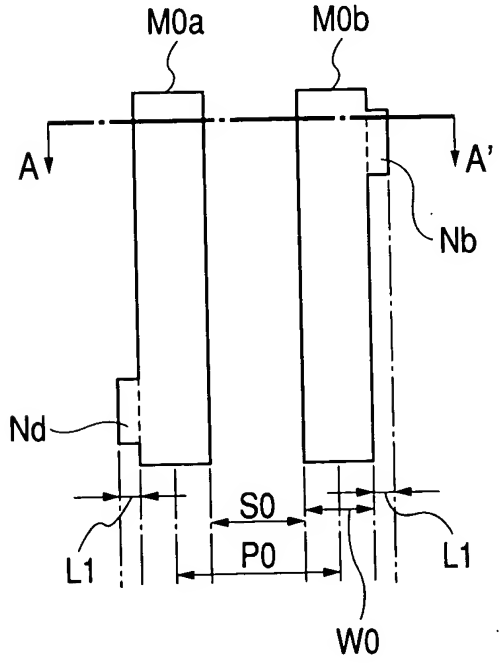

M0a
M0b
A
A'
Nb
Nd
S0
L1
P0
L1
W0

FIG. 3

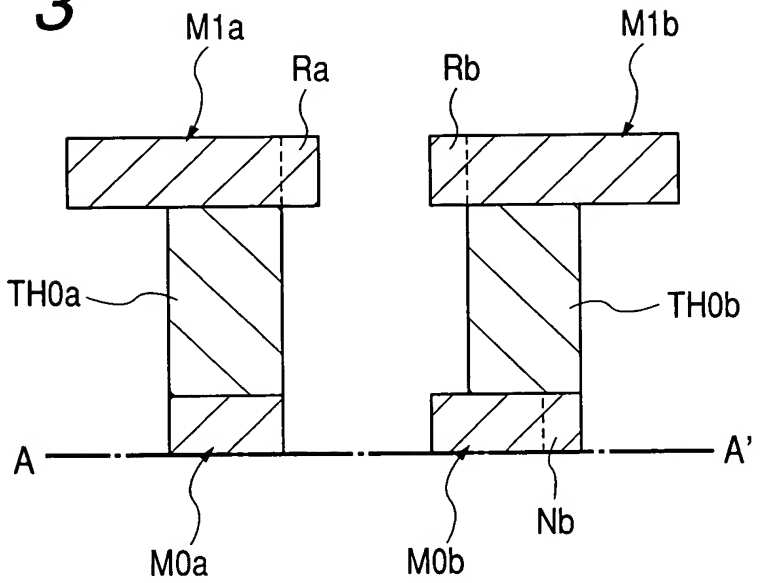

M1a
Ra
Rb
M1b
TH0a
TH0b
A
A'
M0a
M0b
Nb

FIG. 4

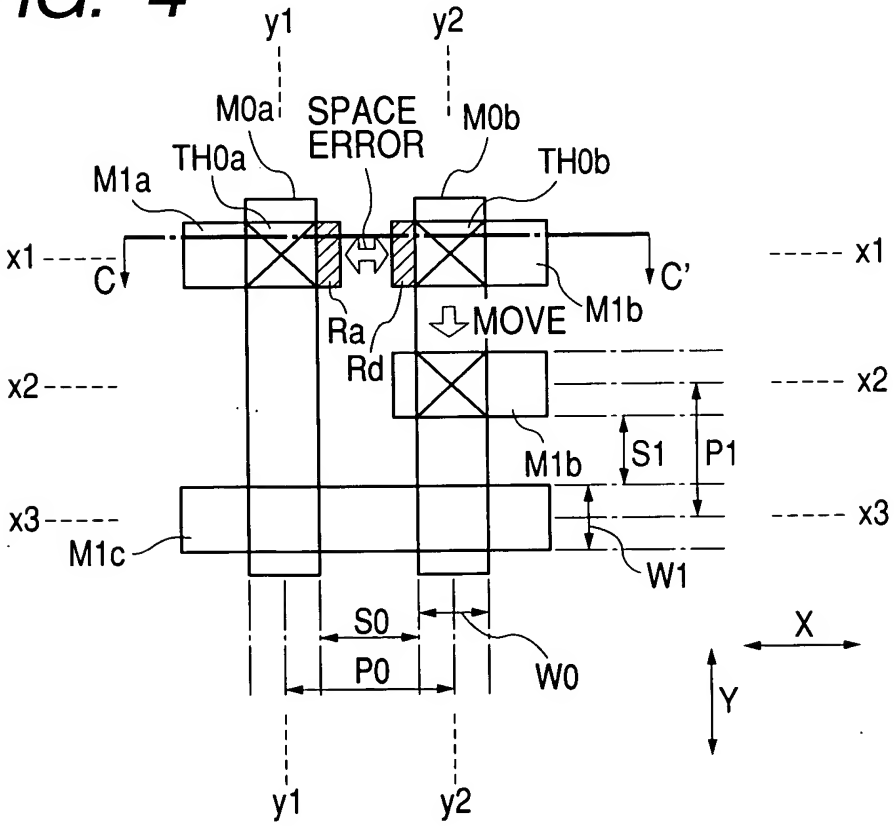

y1
y2
M0a
SPACE
ERROR
M0b
TH0a
TH0b
M1a
x1
C
C'
x1
Ra
MOVE
M1b
Rd
x2
x2
S1
P1
M1b
x3
x3
M1c
W1
S0
X
P0
W0
Y
y1
y2

FIG. 5

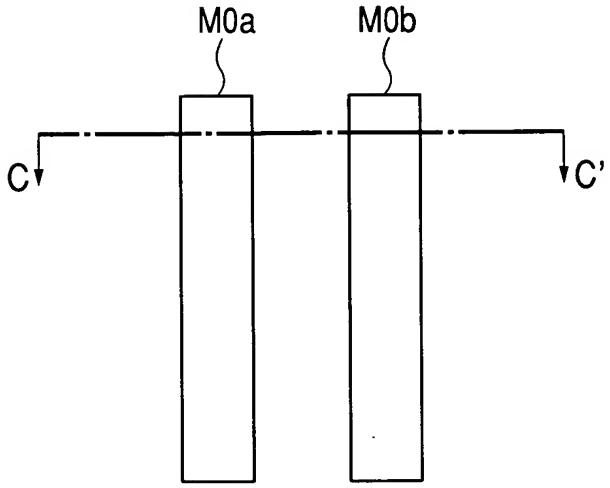


FIG. 6

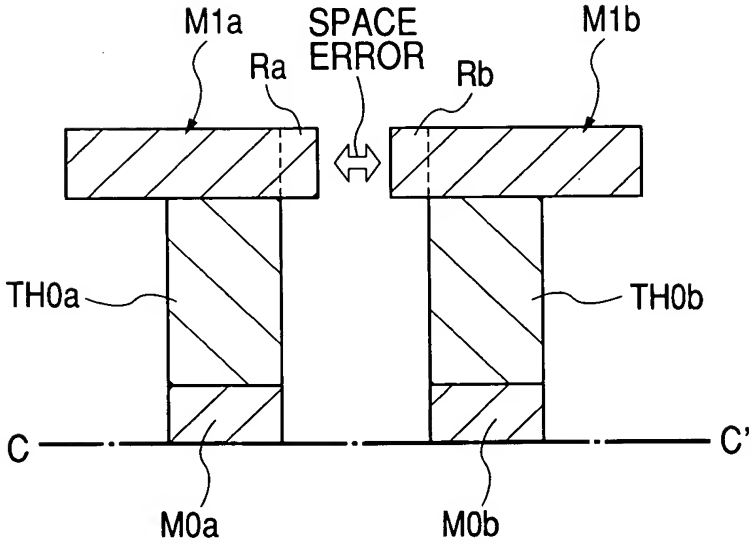


FIG. 7

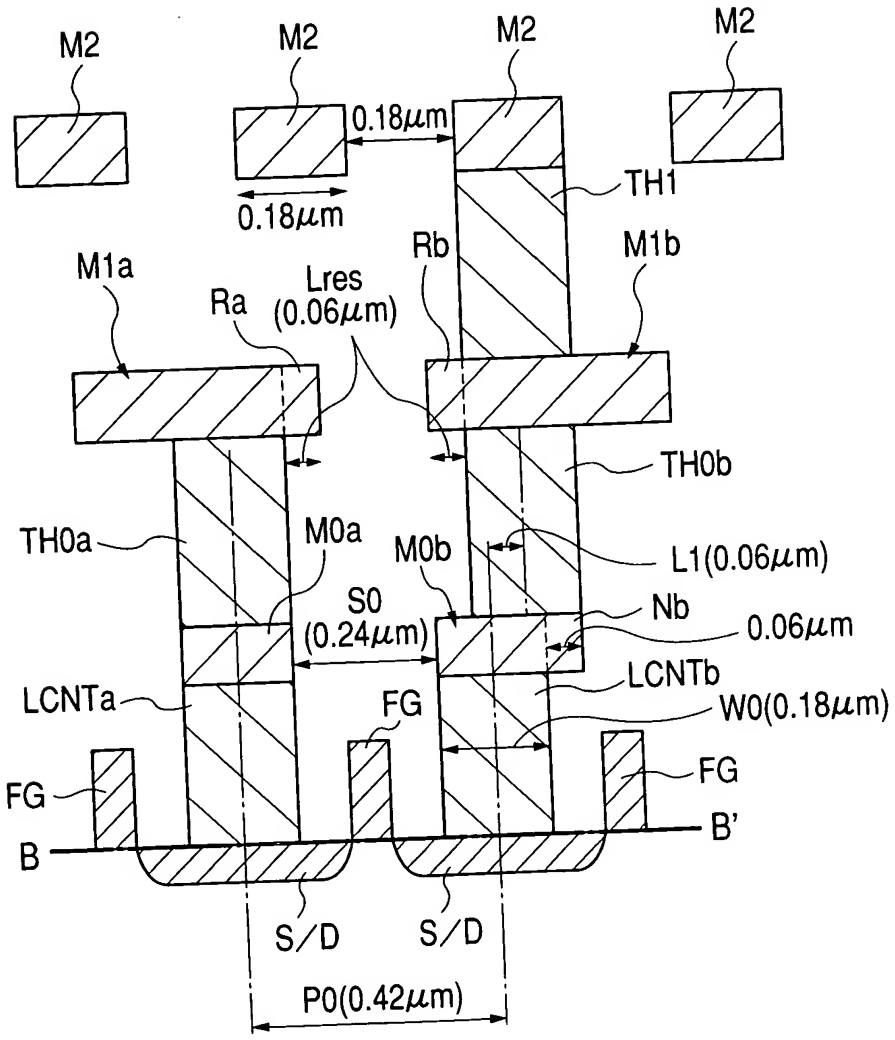

M2
M2
M2
M2
0.18μm
0.18μm
TH1
M1a
Ra
Lres
(0.06μm)
Rb
M1b
TH0b
TH0a
M0a
M0b
L1(0.06μm)
S0
(0.24μm)
Nb
0.06μm
LCNTb
LCNTa
FG
W0(0.18μm)
FG
FG
B
B'
S/D
S/D
P0(0.42μm)

FIG. 8

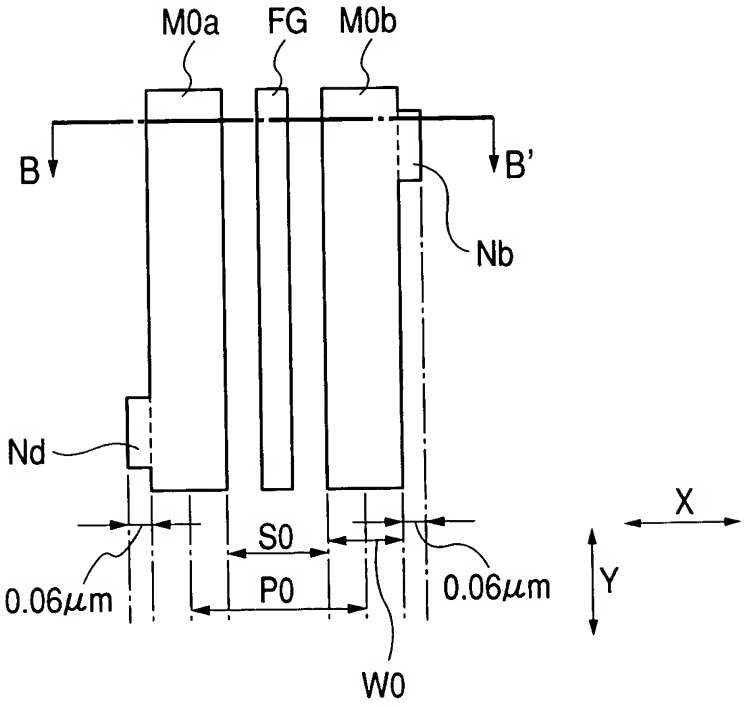


FIG. 9

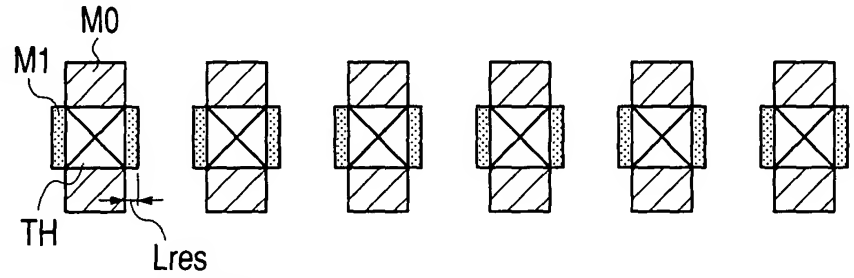
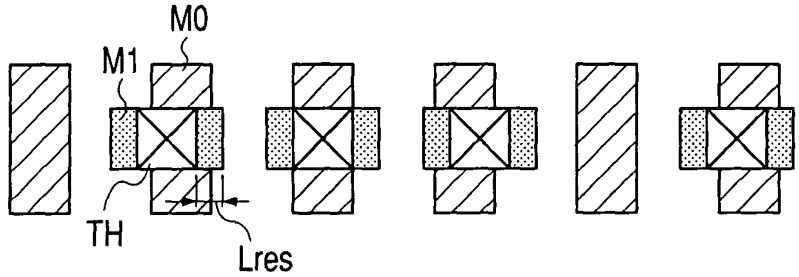
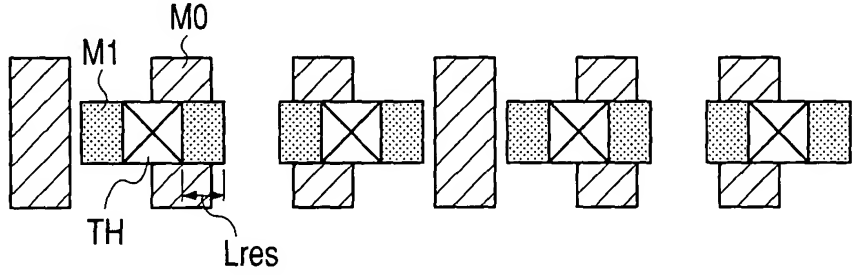
CASE	RESERVOIR LENGTH (Lres)	CLOSEST TH ARRAY	RATE OF TH ARRAY (%)
1	Lres ≦ (P0−P1) / 2		100%
2	(P0−P1) / 2 < Lres Lres ≦ (P0−P1)		75%
3	(P0−P1) < Lres Lres ≦ (P0−P1) × 2		66.7%

FIG. 10

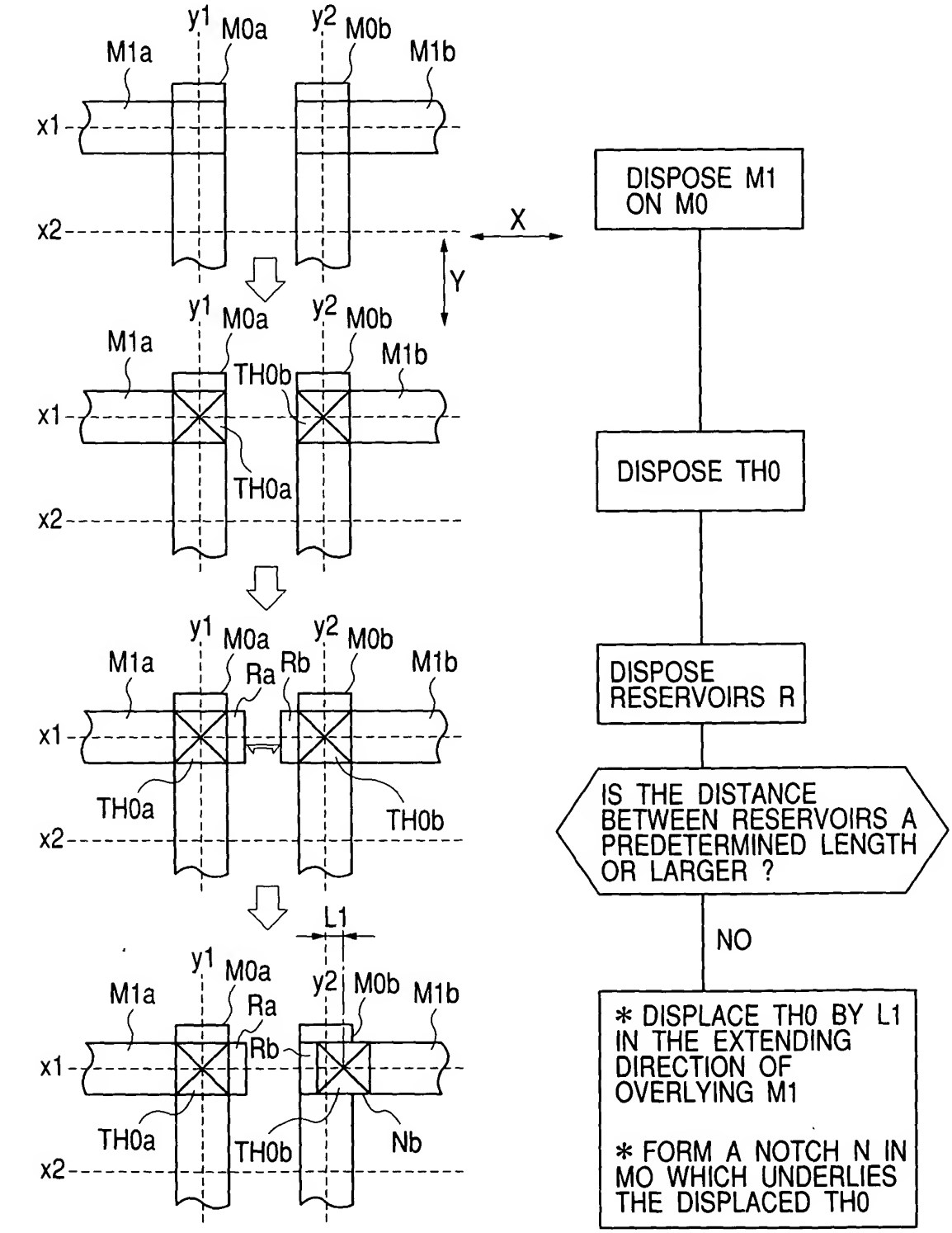
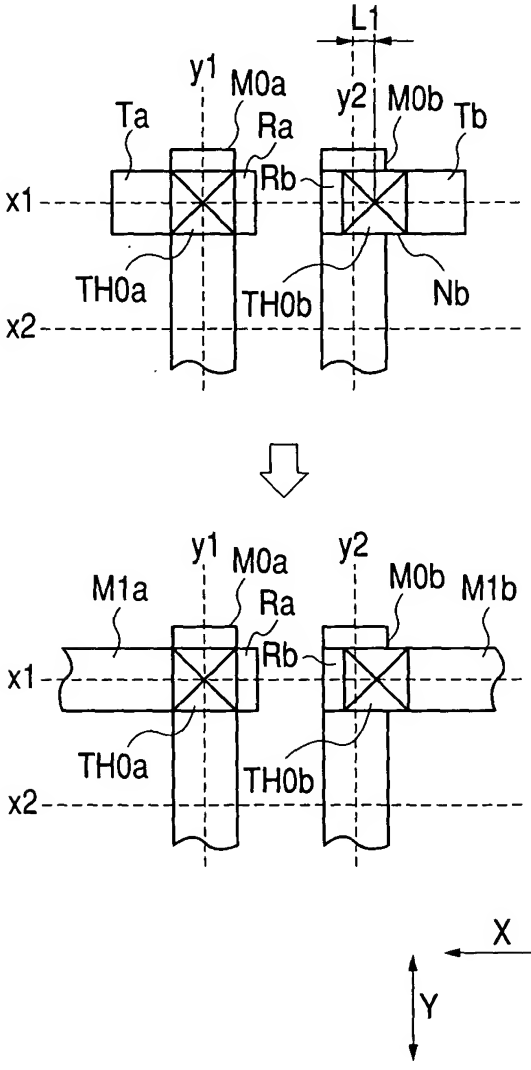

y1
M0a
y2
M0b
M1a
M1b
x1
x2
X
Y
TH0b
TH0a
Ra
Rb
L1
Nb
DISPOSE M1 ON M0
DISPOSE TH0
DISPOSE RESERVOIRS R
IS THE DISTANCE BETWEEN RESERVOIRS A PREDETERMINED LENGTH OR LARGER ?
NO
* DISPLACE TH0 BY L1 IN THE EXTENDING DIRECTION OF OVERLYING M1
* FORM A NOTCH N IN M0 WHICH UNDERLIES THE DISPLACED TH0

FIG. 11



* DISPLACE ONE TH0 ON M0 BY L1

* DISPOSE ONE TH0 A TERMINAL T HAVING RESERVOIR R

* FORM A NOTCH N IN M0 WHICH UNDERLIES THE DISPLACED TH0

DISPOSE M1 IN DIRECTION OPPOSITE TO RESERVOIR R WITH TERMINAL T AS ORIGIN

FIG. 12

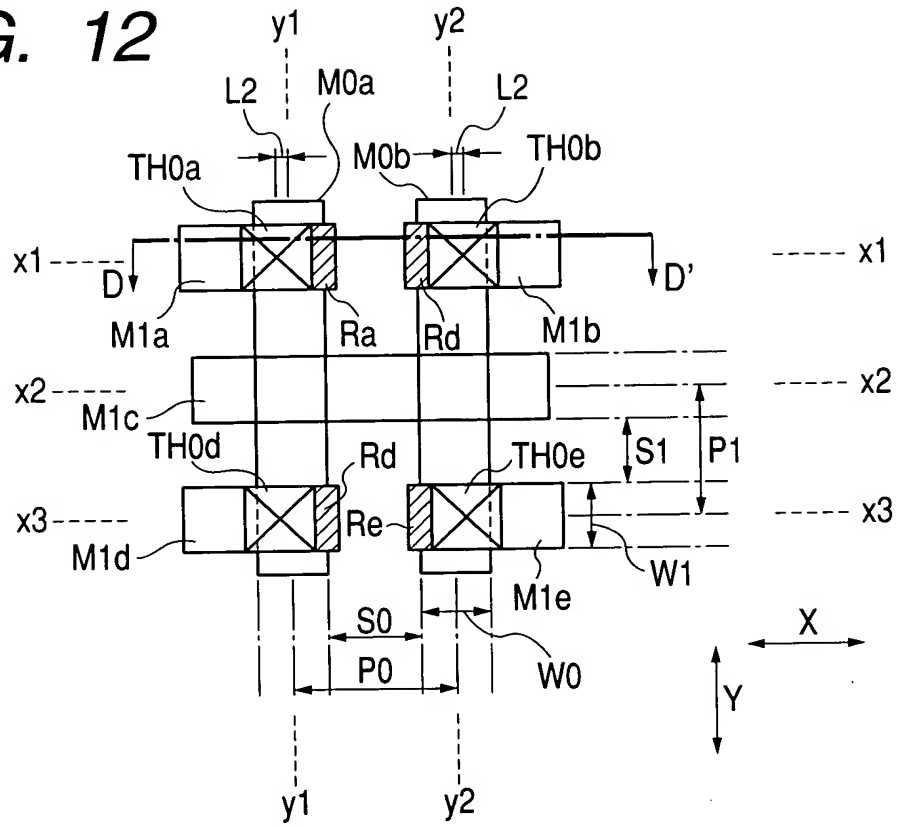

y1
y2
L2
M0a
L2
TH0a
M0b
TH0b
x1
D
D'
x1
M1a
Ra
Rd
M1b
x2
x2
M1c
TH0d
Rd
TH0e
S1
P1
x3
Re
x3
M1d
W1
M1e
S0
X
P0
W0
Y
y1
y2

FIG. 13

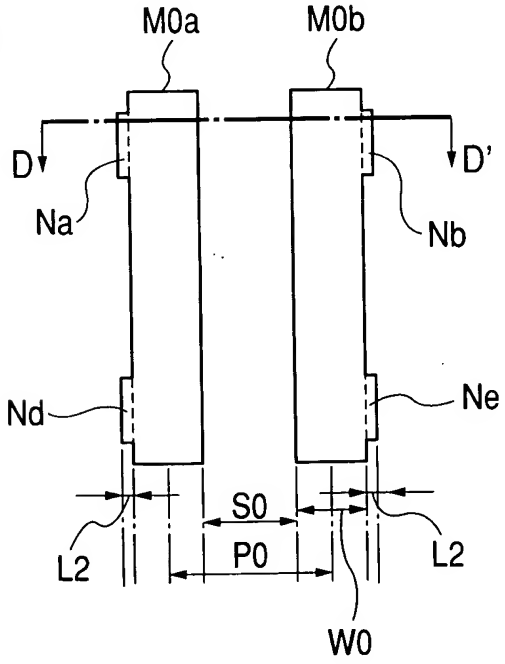

M0a
M0b
D
D'
Na
Nb
Nd
Ne
S0
L2
P0
L2
W0

FIG. 14

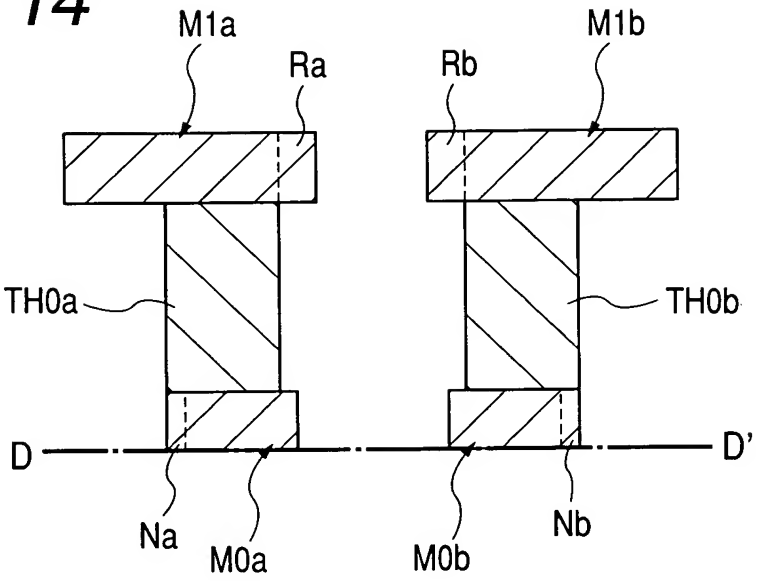

M1a
Ra
Rb
M1b
TH0a
TH0b
D
D'
Na
M0a
M0b
Nb

FIG. 15

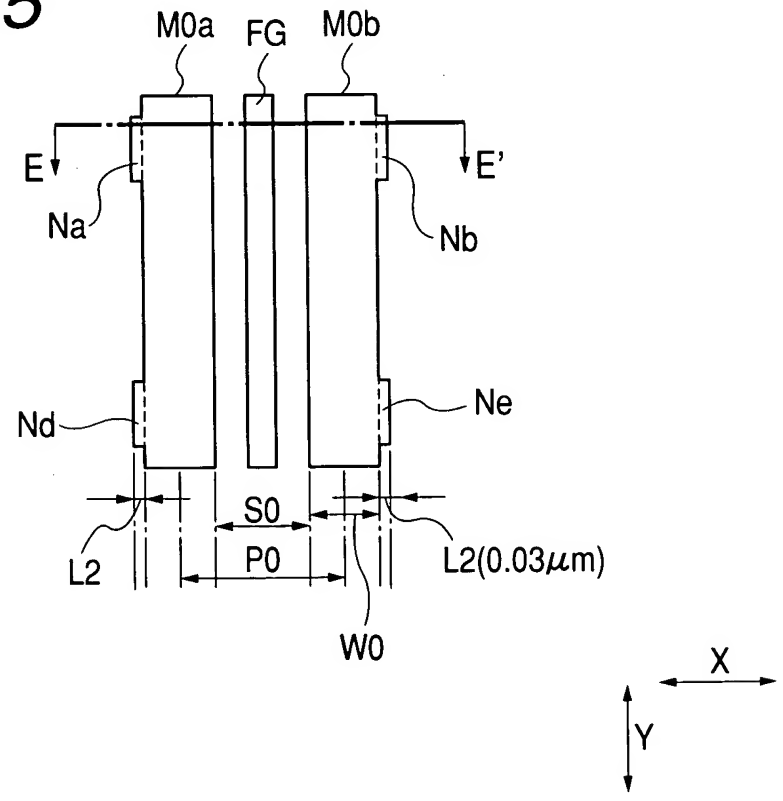

M0a
FG
M0b
E
E'
Na
Nb
Nd
Ne
S0
P0
L2
L2(0.03μm)
W0
X
Y

FIG. 16

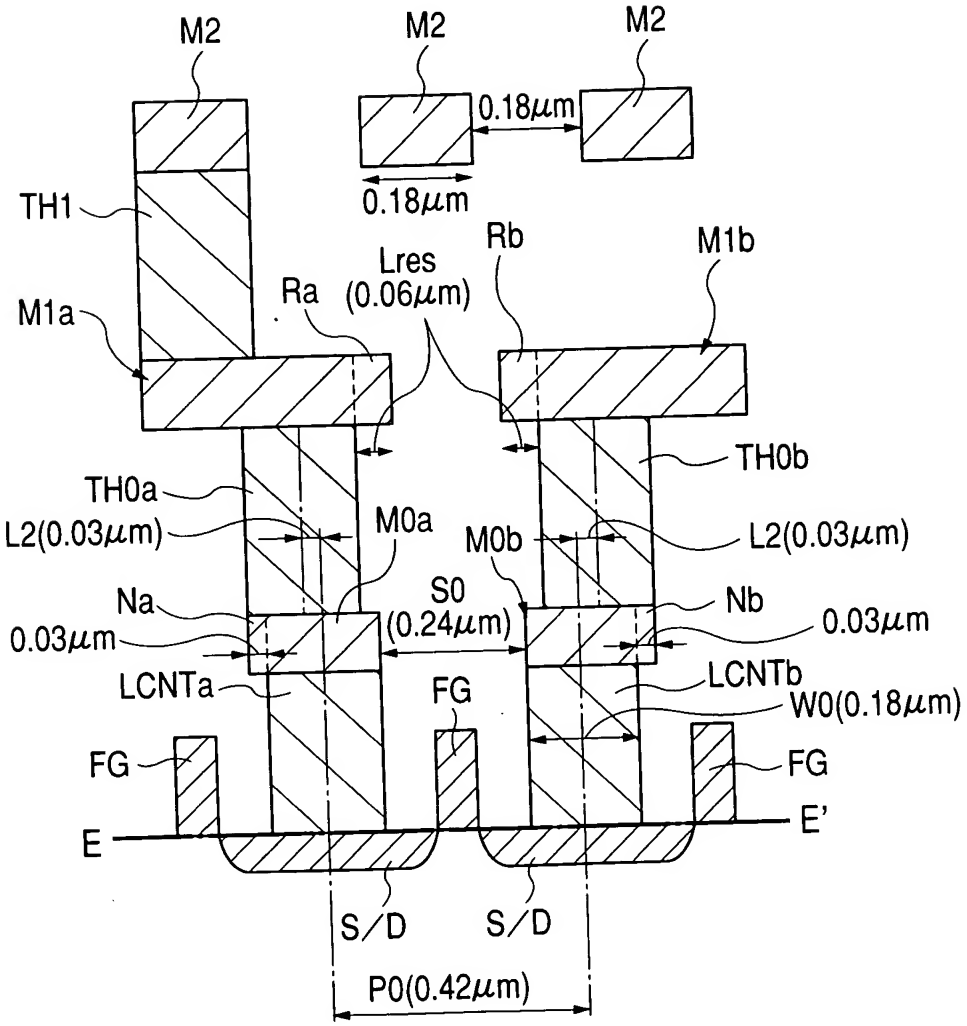

M2
M2
M2
0.18μm
0.18μm
TH1
Rb
M1b
Lres
(0.06μm)
Ra
M1a
TH0b
TH0a
L2(0.03μm)
M0a
M0b
L2(0.03μm)
S0
(0.24μm)
Na
Nb
0.03μm
0.03μm
LCNTa
FG
LCNTb
W0(0.18μm)
FG
FG
E
E'
S/D
S/D
P0(0.42μm)

FIG. 17

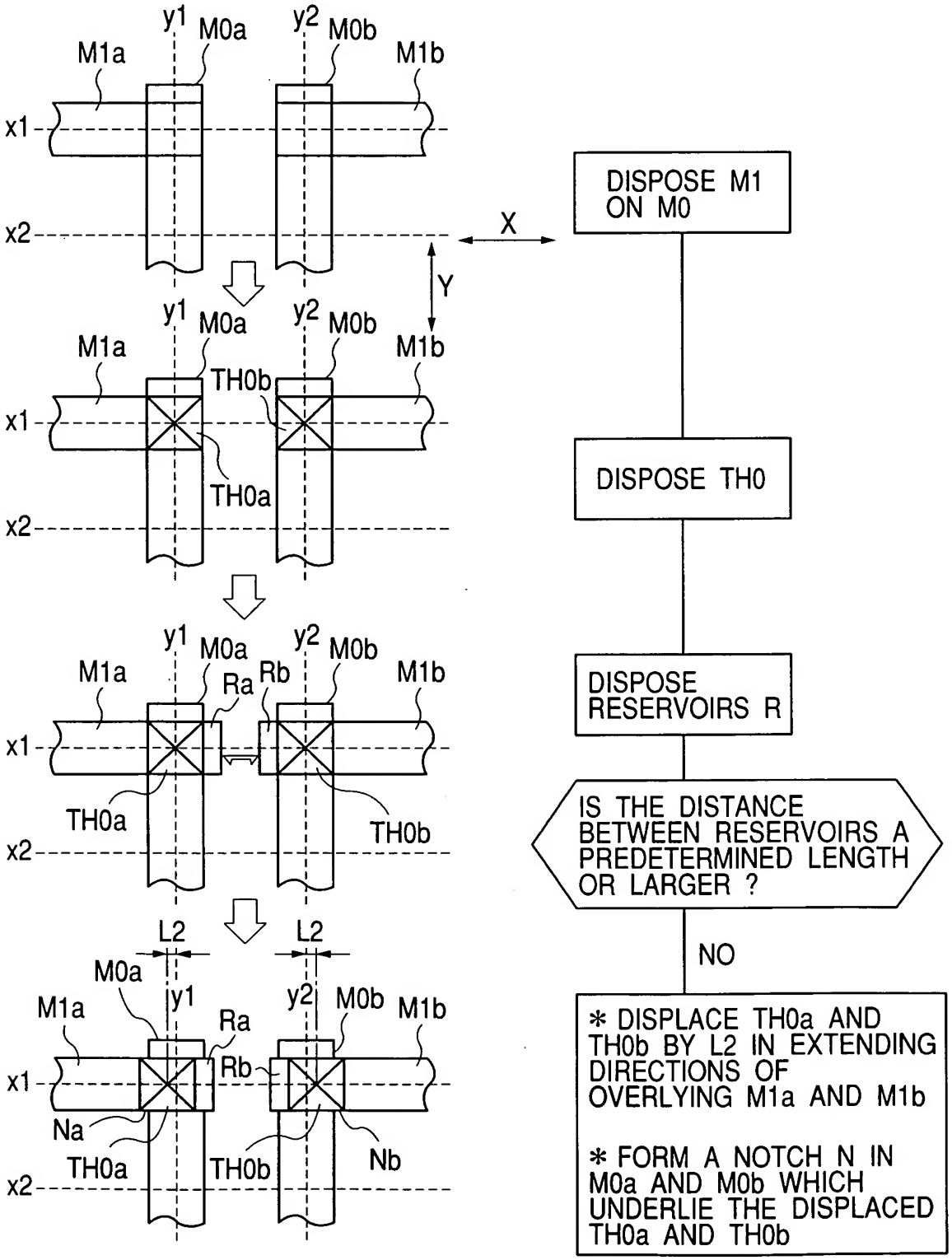
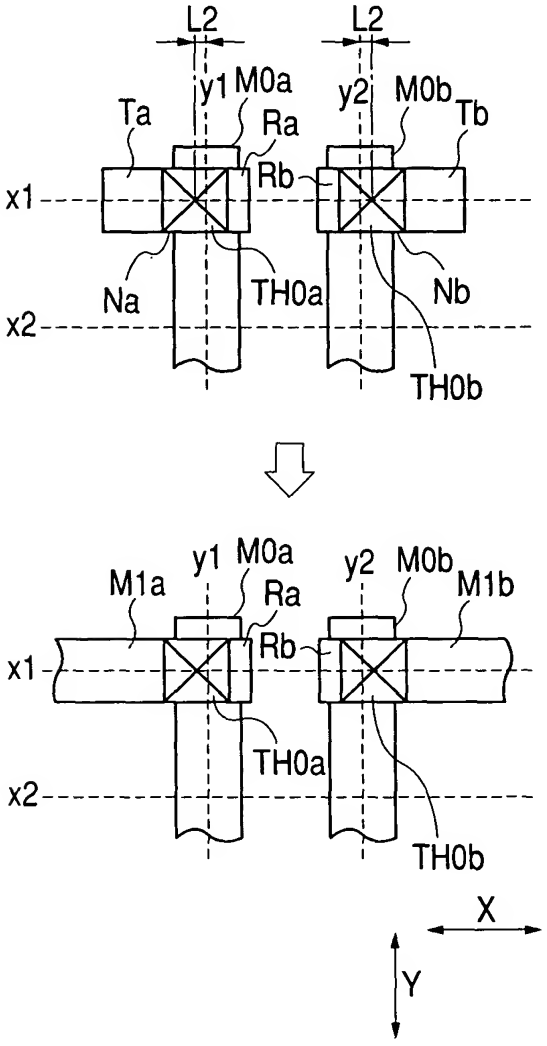

y1
M0a
y2
M0b
M1a
M1b
x1
x2
X
Y
TH0b
TH0a
Ra
Rb
L2
Na
Nb
DISPOSE M1 ON M0
DISPOSE TH0
DISPOSE RESERVOIRS R
IS THE DISTANCE BETWEEN RESERVOIRS A PREDETERMINED LENGTH OR LARGER ?
NO
* DISPLACE TH0a AND TH0b BY L2 IN EXTENDING DIRECTIONS OF OVERLYING M1a AND M1b
* FORM A NOTCH N IN M0a AND M0b WHICH UNDERLIE THE DISPLACED TH0a AND TH0b

FIG. 18



* DISPLACE TH0a AND TH0b ON M0 BY L2 IN DIRECTIONS AWAY FROM EACH OTHER

* DISPOSE ON TH0a AND TH0b TERMINALS Ta AND Tb HAVING RESERVOIR R IN DIRECTIONS OPPOSITE TO THE DISPLACED DIRECTIONS

* FORM A NOTCH N IN M0 WHICH UNDERLIES TH0a AND TH0b

DISPOSE M1 IN DIRECTION OPPOSITE TO RESERVOIR R WITH TERMINAL Ta AND Tb AS ORIGINS

FIG. 19

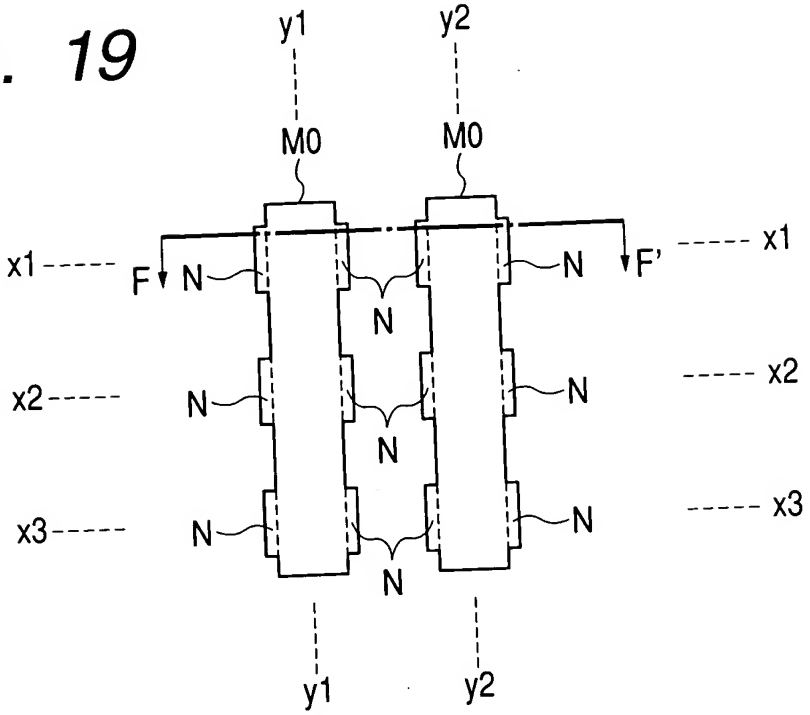

y1
y2
M0
M0
x1
F
N
N
N
F'
x1
x2
N
N
N
x2
x3
N
N
N
x3
y1
y2

FIG. 20

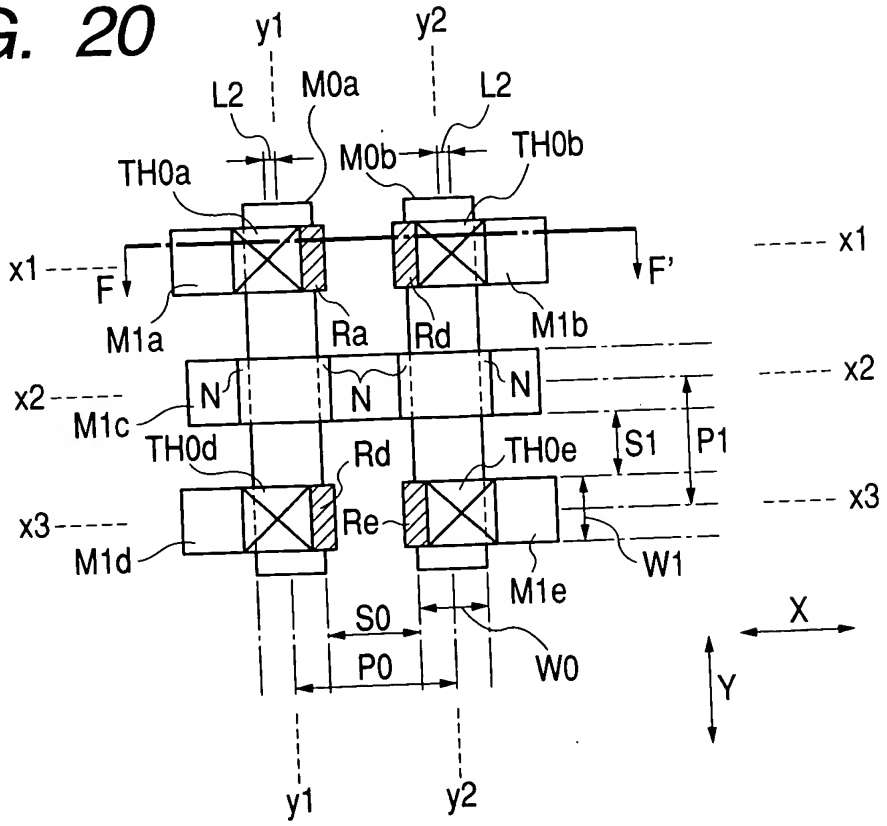

y1
y2
L2
M0a
L2
M0b
TH0b
TH0a
x1
F
F'
x1
M1a
Ra
Rd
M1b
x2
N
N
N
x2
M1c
TH0d
Rd
TH0e
S1
P1
x3
Re
x3
M1d
W1
M1e
S0
W0
P0
X
Y
y1
y2

FIG. 21

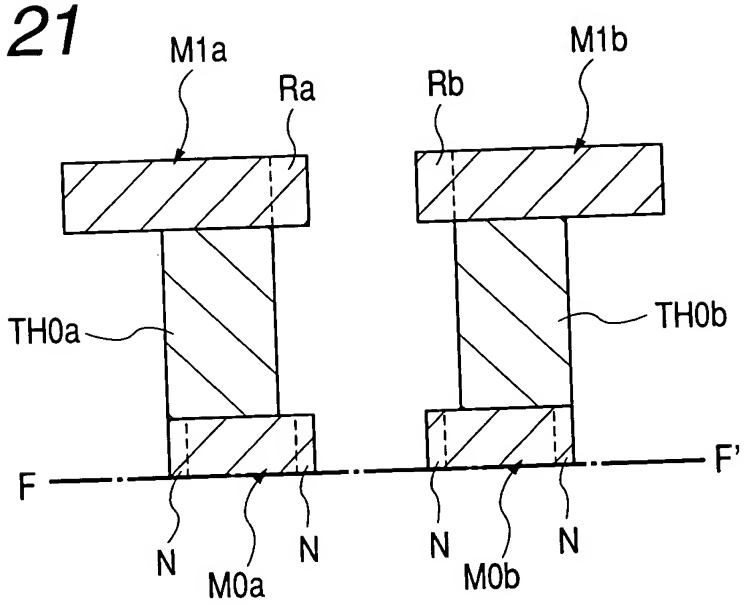

M1a
Ra
Rb
M1b
TH0a
TH0b
F
F'
N
M0a
N
N
M0b
N

FIG. 22

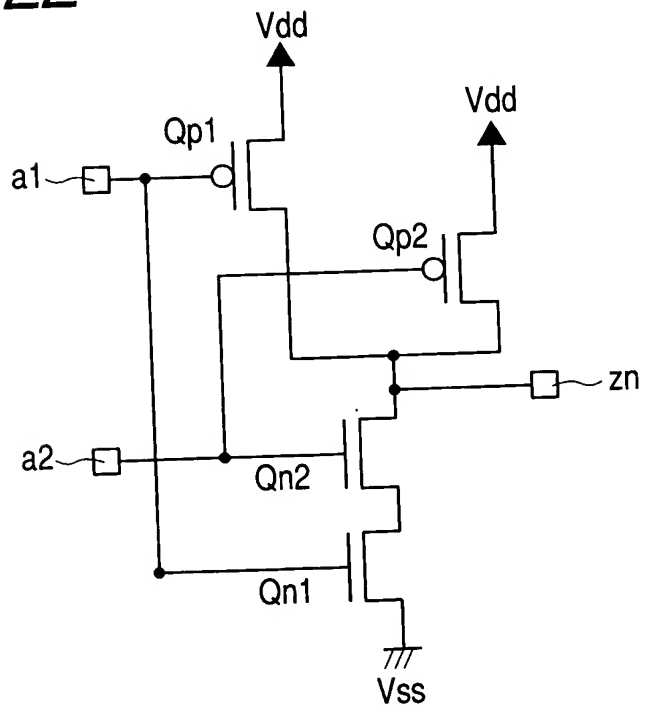

Vdd
Vdd
Qp1
a1
Qp2
zn
a2
Qn2
Qn1
Vss

FIG. 23

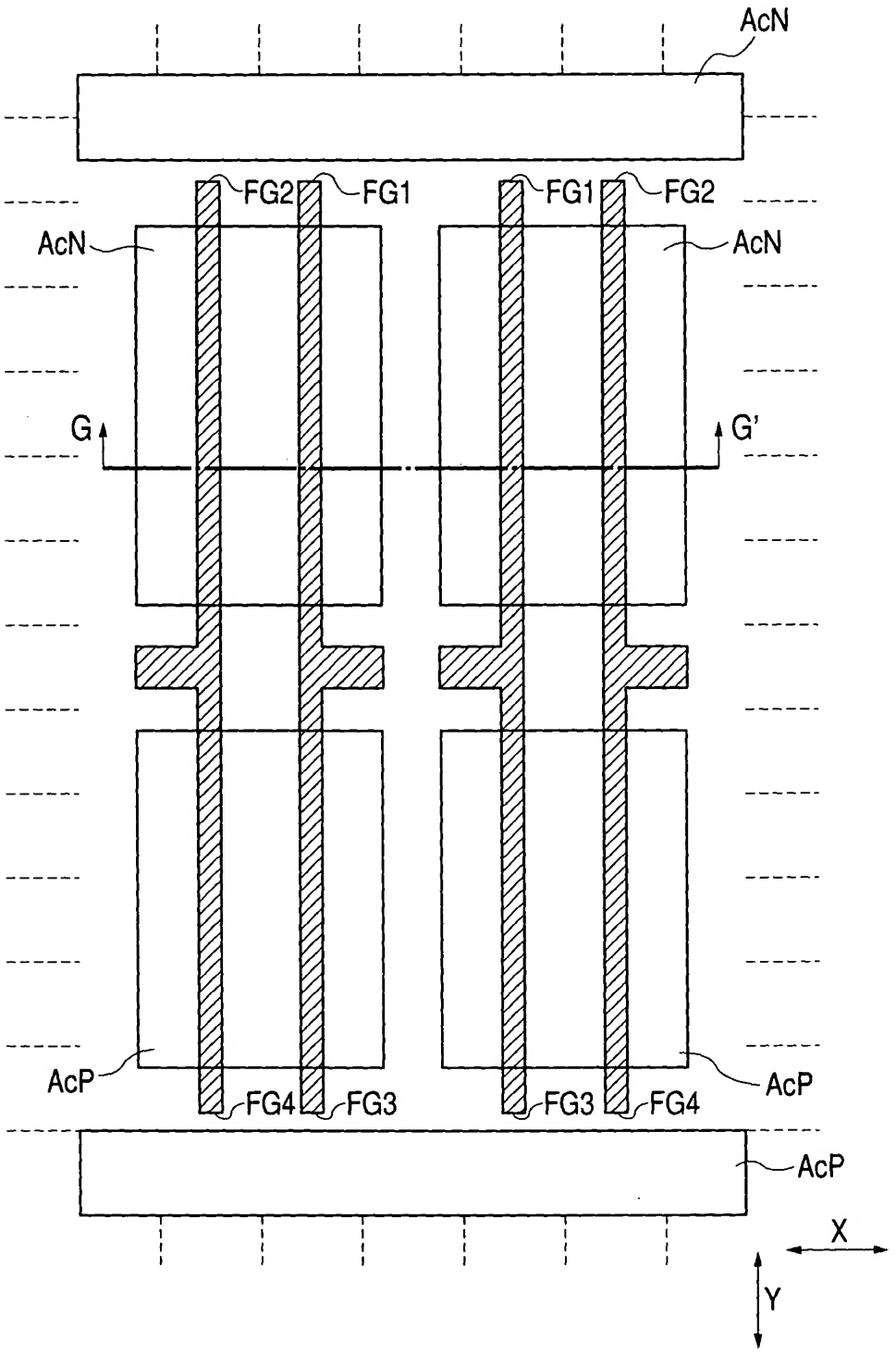


FIG. 24

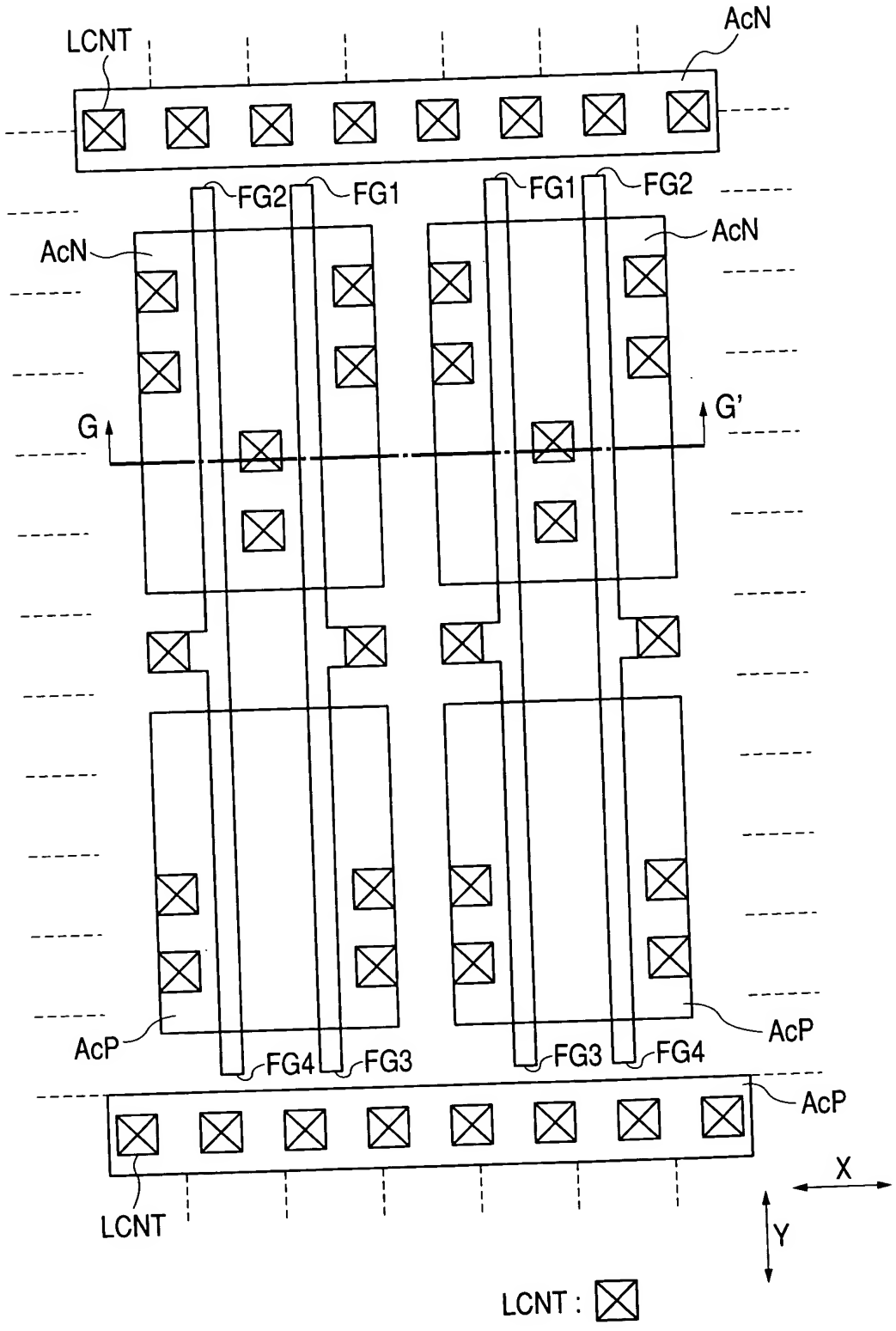

LCNT
AcN
FG2
FG1
FG1
FG2
AcN
AcN
G
G'
AcP
AcP
FG4
FG3
FG3
FG4
AcP
LCNT
X
Y
LCNT :

FIG. 25

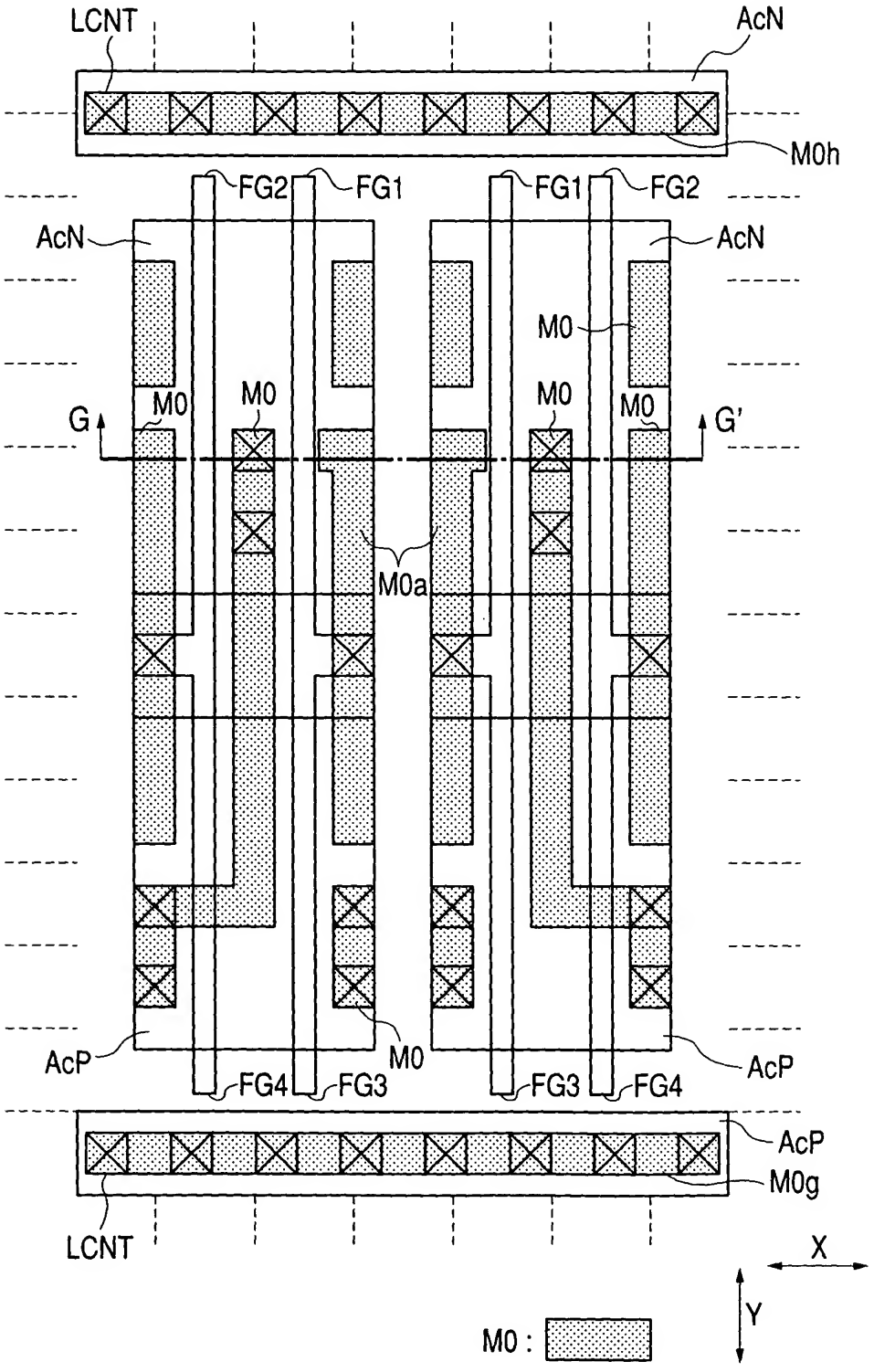

LCNT
AcN
M0h
FG2
FG1
FG1
FG2
AcN
AcN
M0
M0
M0
M0
M0
G
G'
M0a
AcP
M0
AcP
FG4
FG3
FG3
FG4
AcP
M0g
LCNT
X
Y
M0 :

FIG. 26

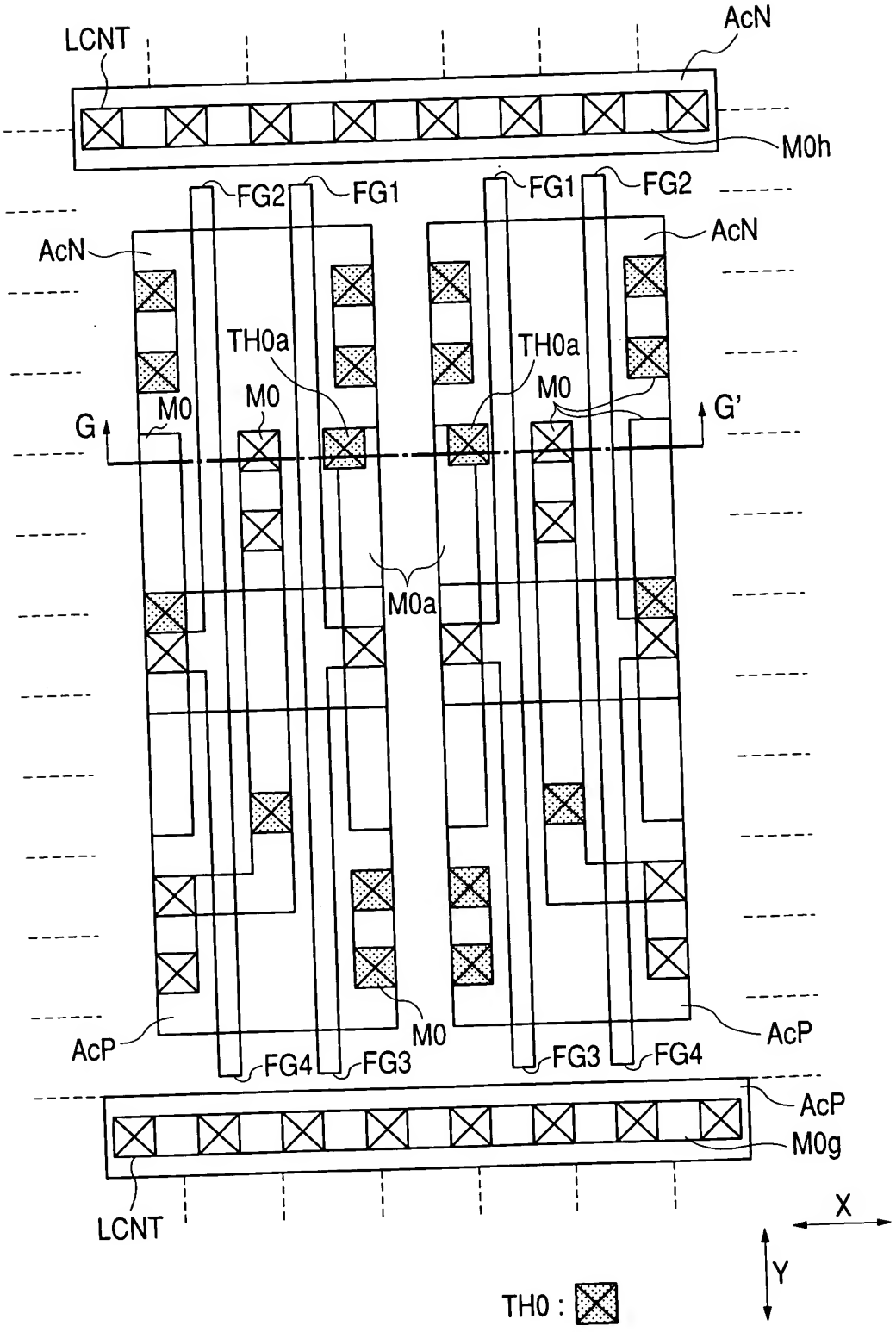

LCNT
AcN
M0h
FG2
FG1
FG1
FG2
AcN
AcN
TH0a
TH0a
M0
M0
M0
G
G'
M0a
AcP
M0
AcP
FG4
FG3
FG3
FG4
AcP
M0g
LCNT
X
Y
TH0 :

FIG. 27

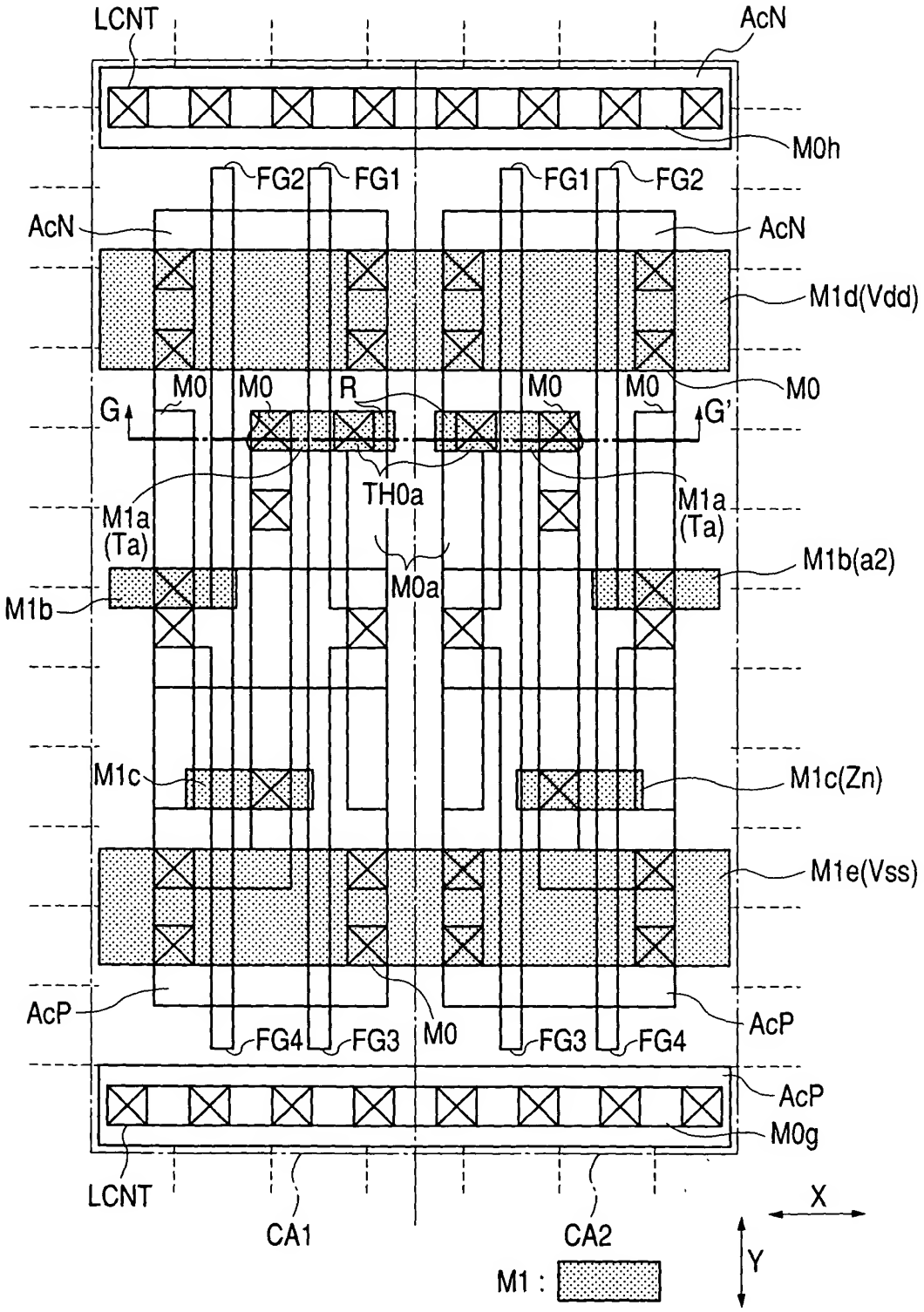

LCNT
AcN
M0h
FG2
FG1
FG1
FG2
AcN
AcN
M1d(Vdd)
M0
M0
R
M0
M0
M0
G
G'
TH0a
M1a
(Ta)
M1a
(Ta)
M1b(a2)
M0a
M1b
M1c
M1c(Zn)
M1e(Vss)
AcP
FG4
FG3
M0
FG3
FG4
AcP
AcP
M0g
LCNT
CA1
CA2
X
Y
M1 :

FIG. 28

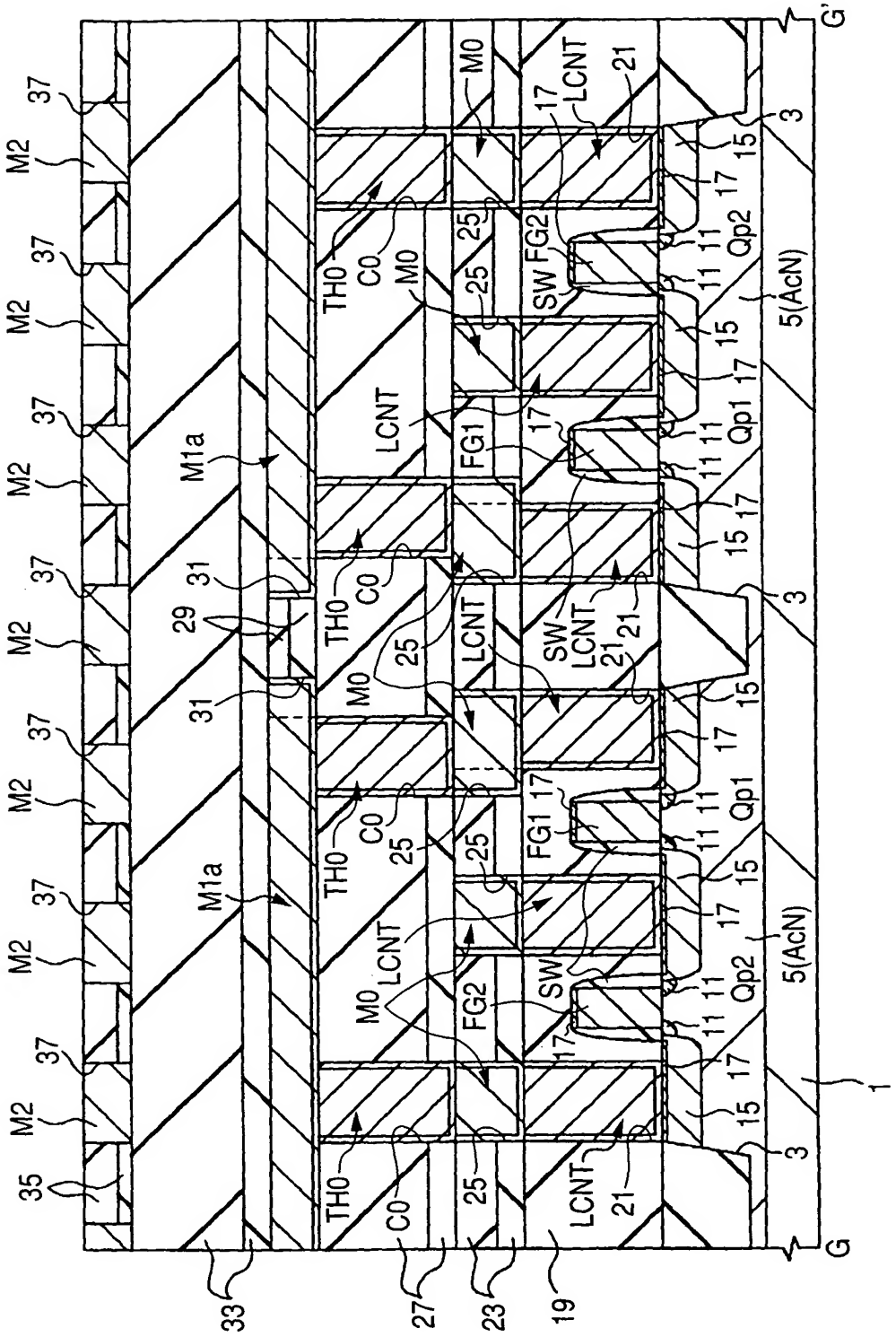

G'
G
1
3
5(AcN)
15
17
11
21
25
31
33
35
37
19
23
27
29
M0
M1a
M2
TH0
C0
LCNT
FG1
FG2
SW
Qp1
Qp2

FIG. 29

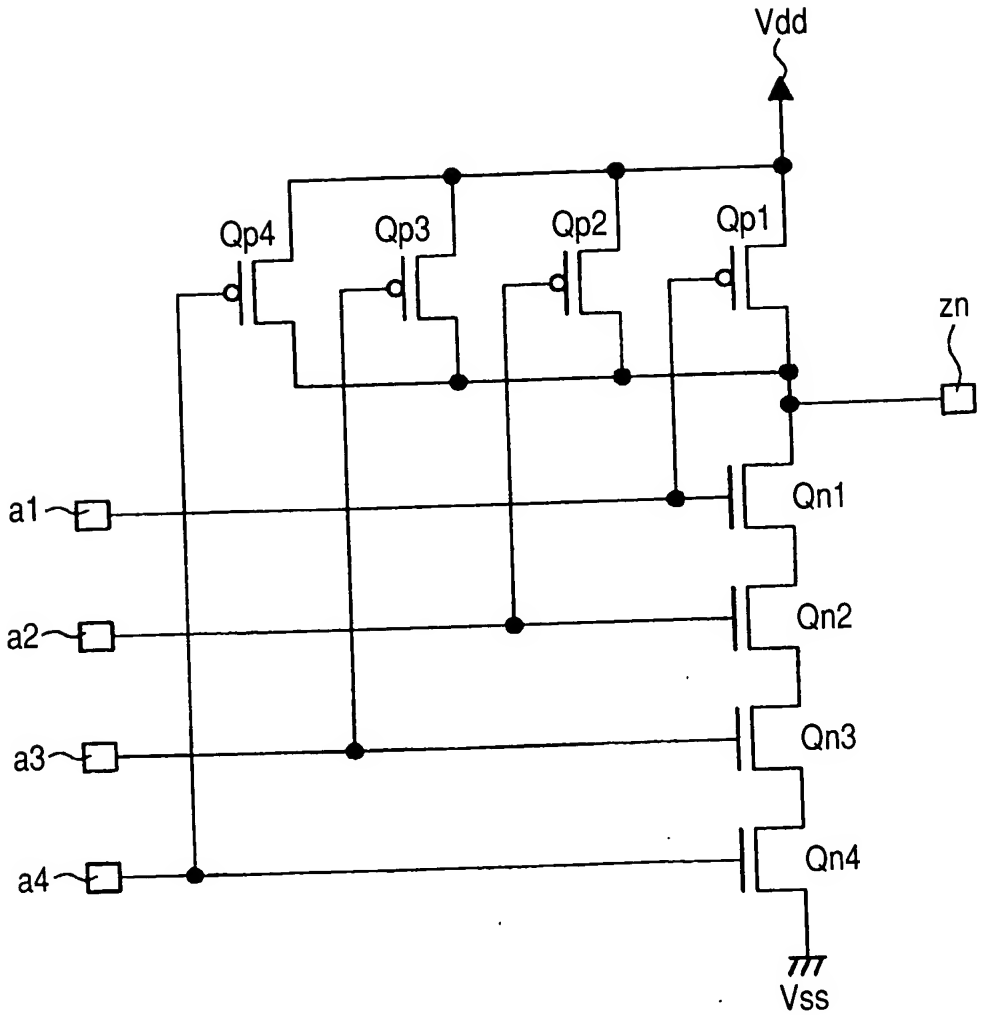


FIG. 30

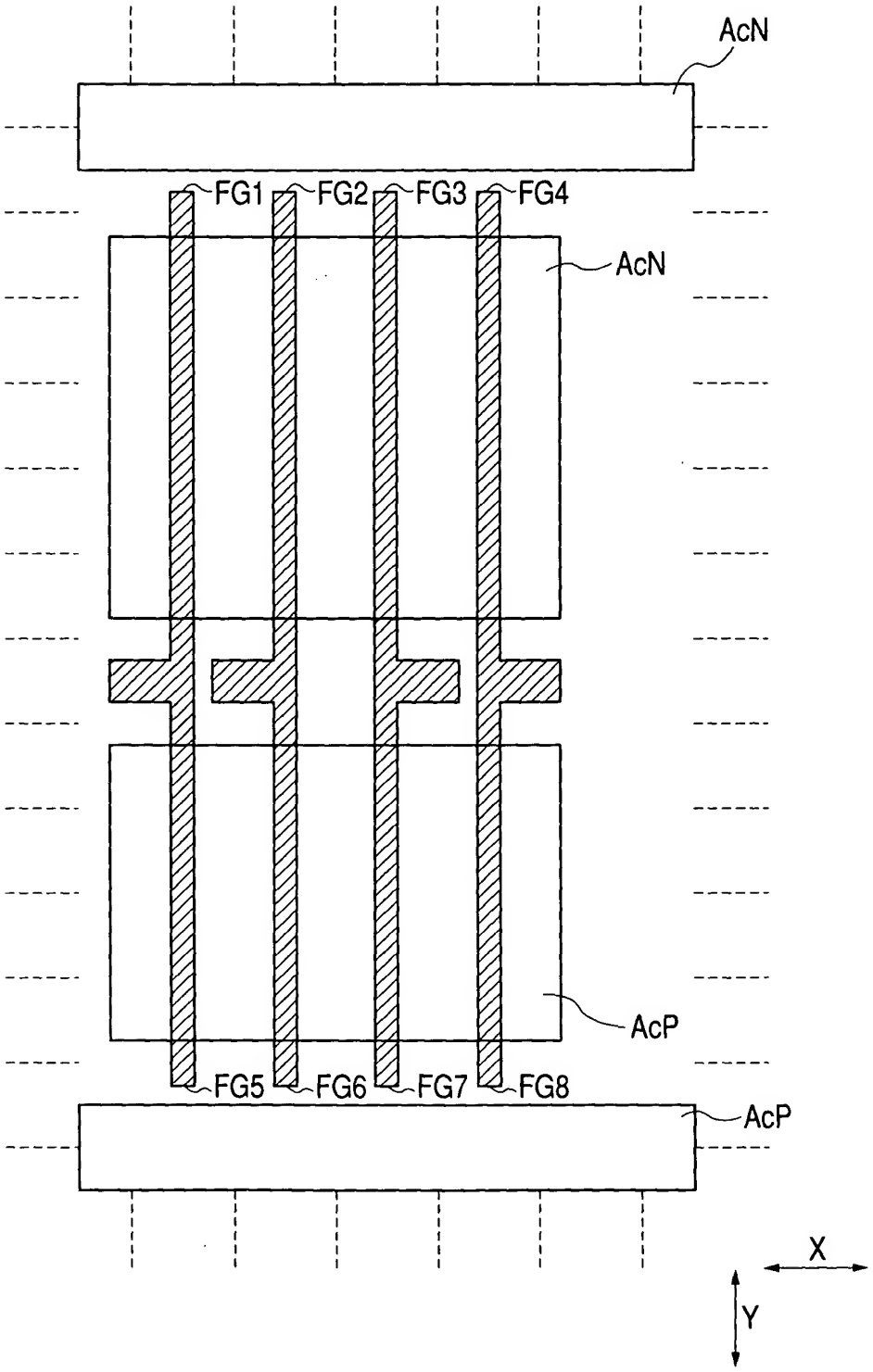


FIG. 31

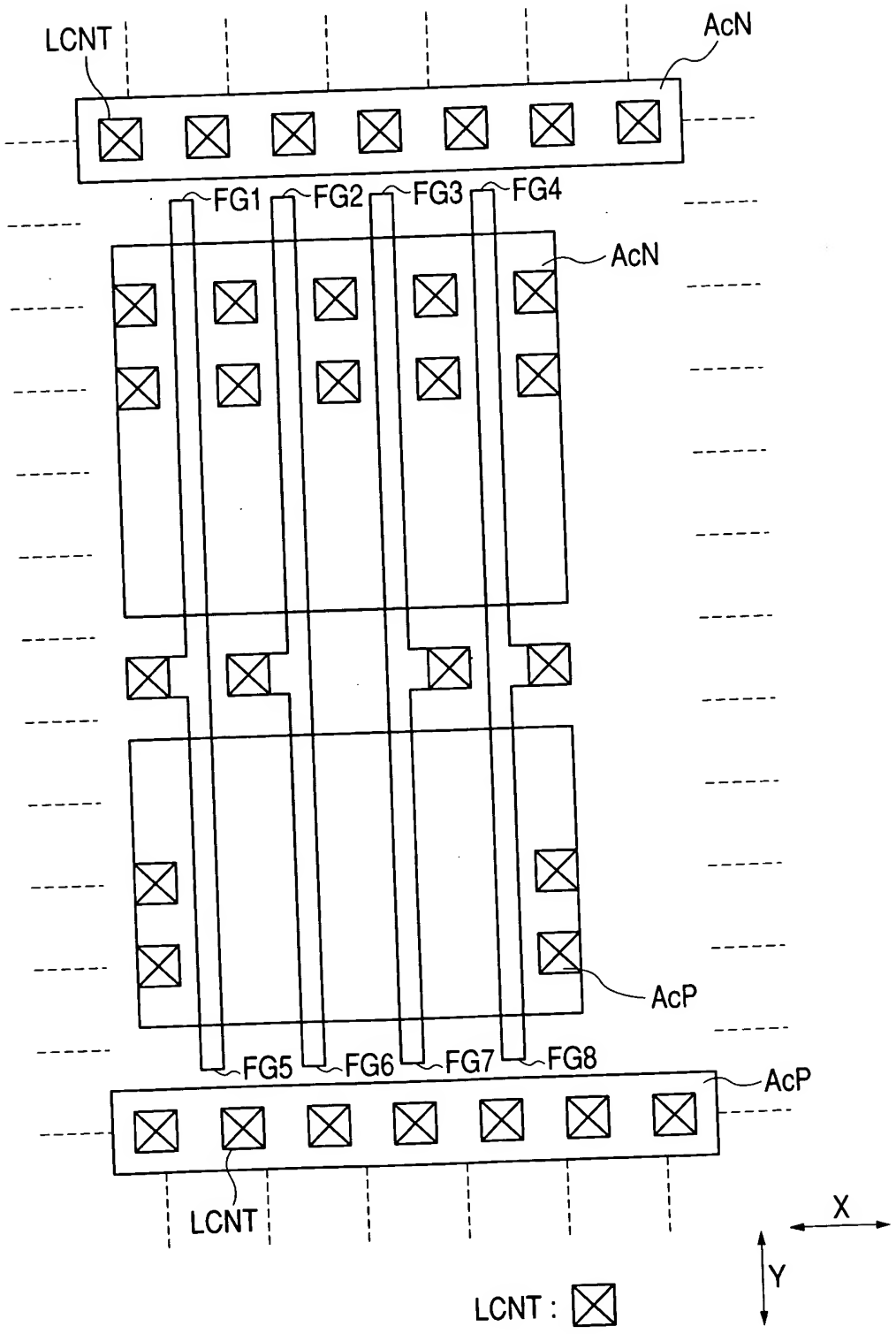

LCNT
AcN
FG1
FG2
FG3
FG4
AcN
AcP
FG5
FG6
FG7
FG8
AcP
LCNT
X
Y
LCNT :

FIG. 32

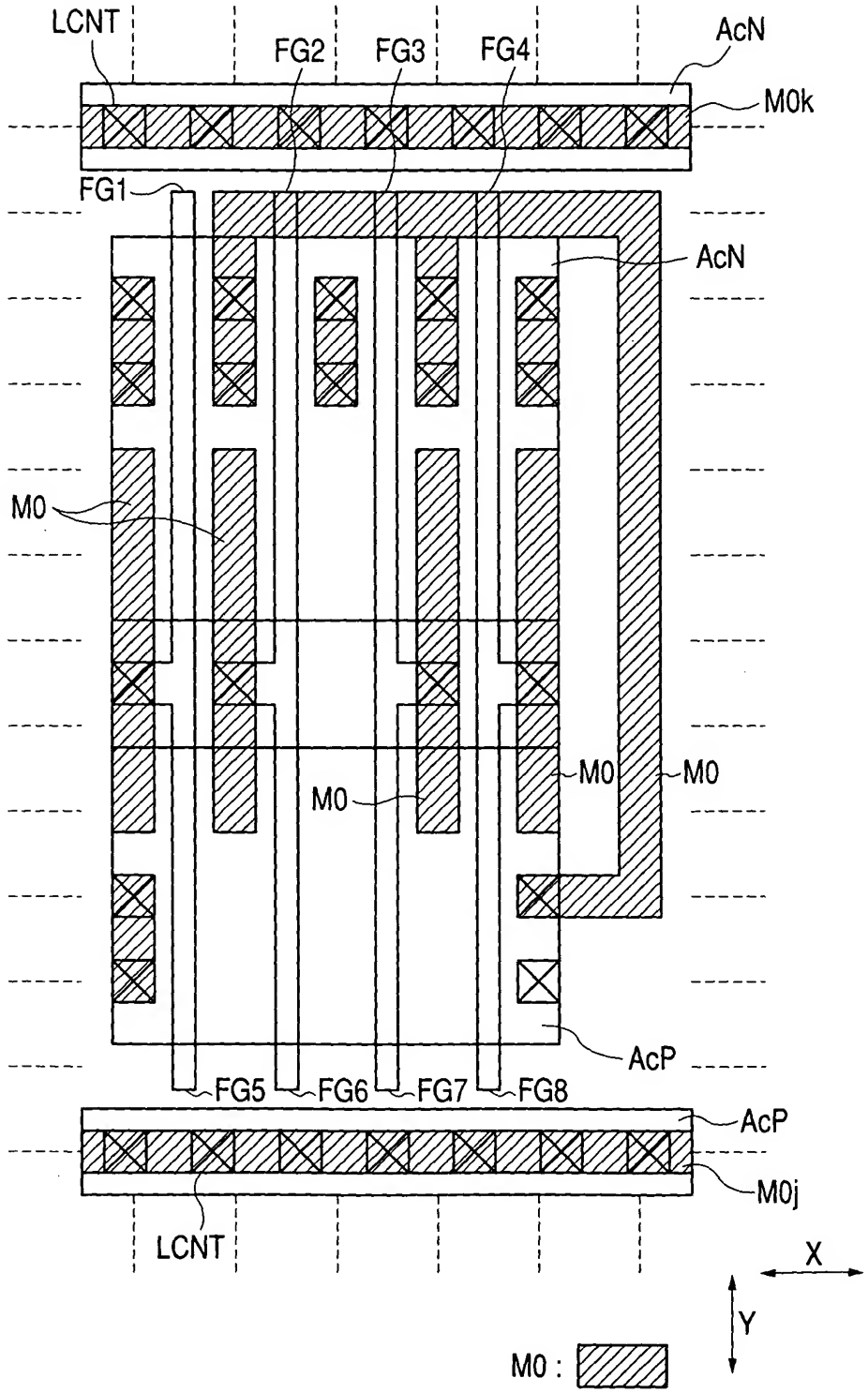

LCNT
FG2
FG3
FG4
AcN
M0k
FG1
AcN
M0
M0
M0
M0
AcP
FG5
FG6
FG7
FG8
AcP
M0j
LCNT
X
Y
M0 :

FIG. 33

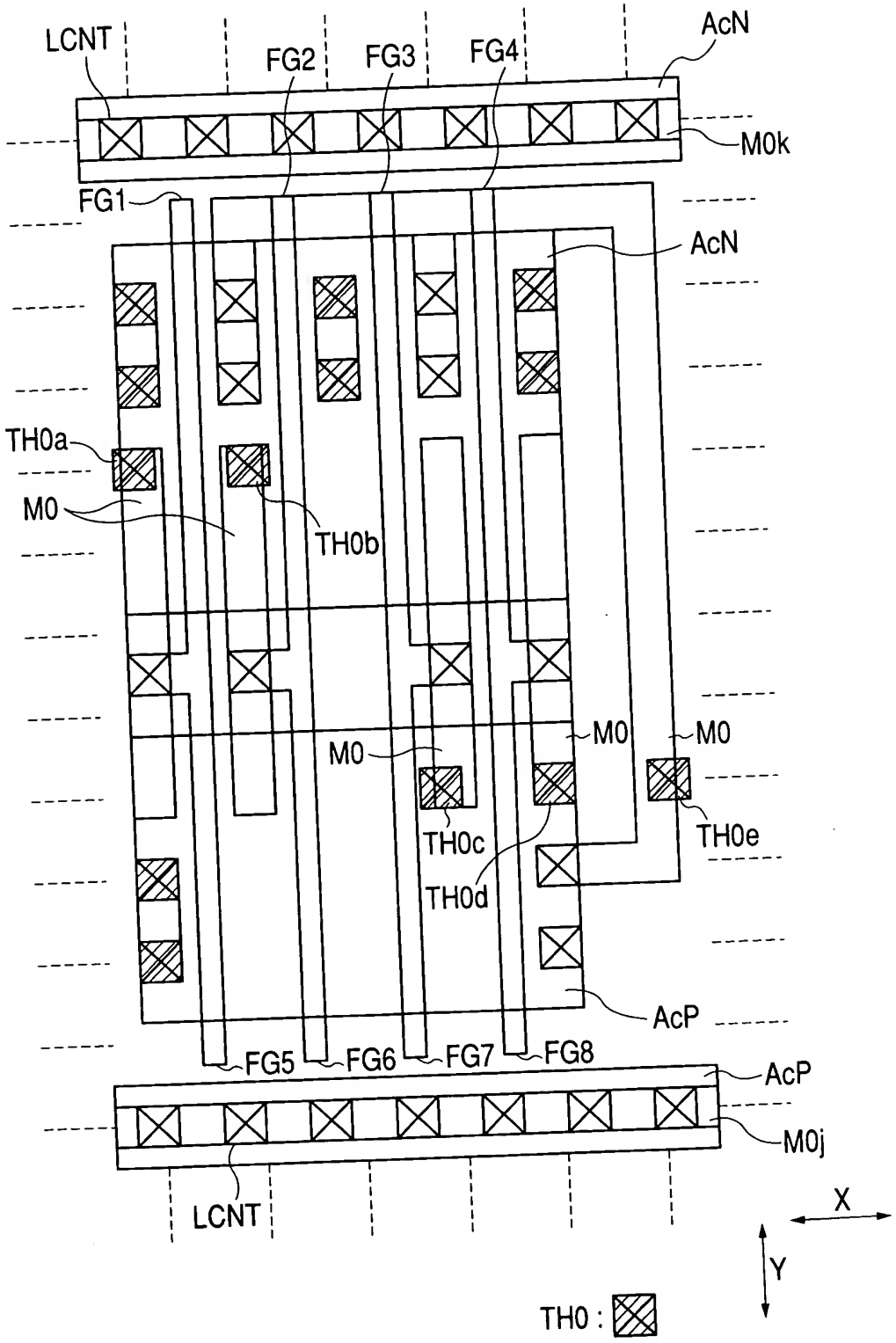

LCNT
FG2
FG3
FG4
AcN
M0k
FG1
AcN
TH0a
M0
TH0b
M0
M0
M0
TH0c
TH0e
TH0d
AcP
FG5
FG6
FG7
FG8
AcP
M0j
LCNT
X
Y
TH0 :

FIG. 34

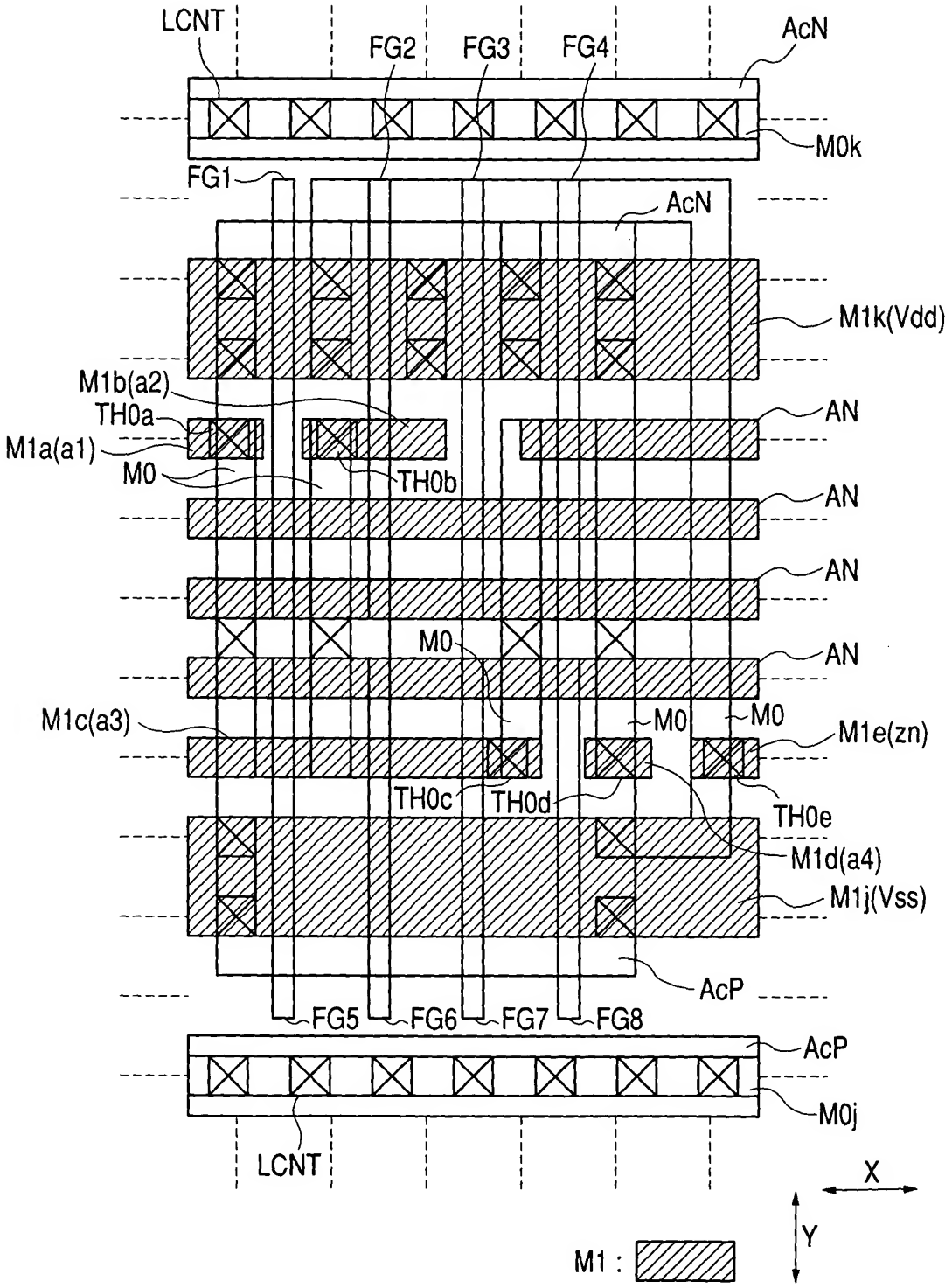

LCNT
FG2
FG3
FG4
AcN
M0k
FG1
AcN
M1k(Vdd)
M1b(a2)
TH0a
M1a(a1)
M0
TH0b
AN
AN
AN
M0
AN
M1c(a3)
M0
M0
M1e(zn)
TH0c
TH0d
TH0e
M1d(a4)
M1j(Vss)
AcP
FG5
FG6
FG7
FG8
AcP
M0j
LCNT
X
Y
M1 :

FIG. 35

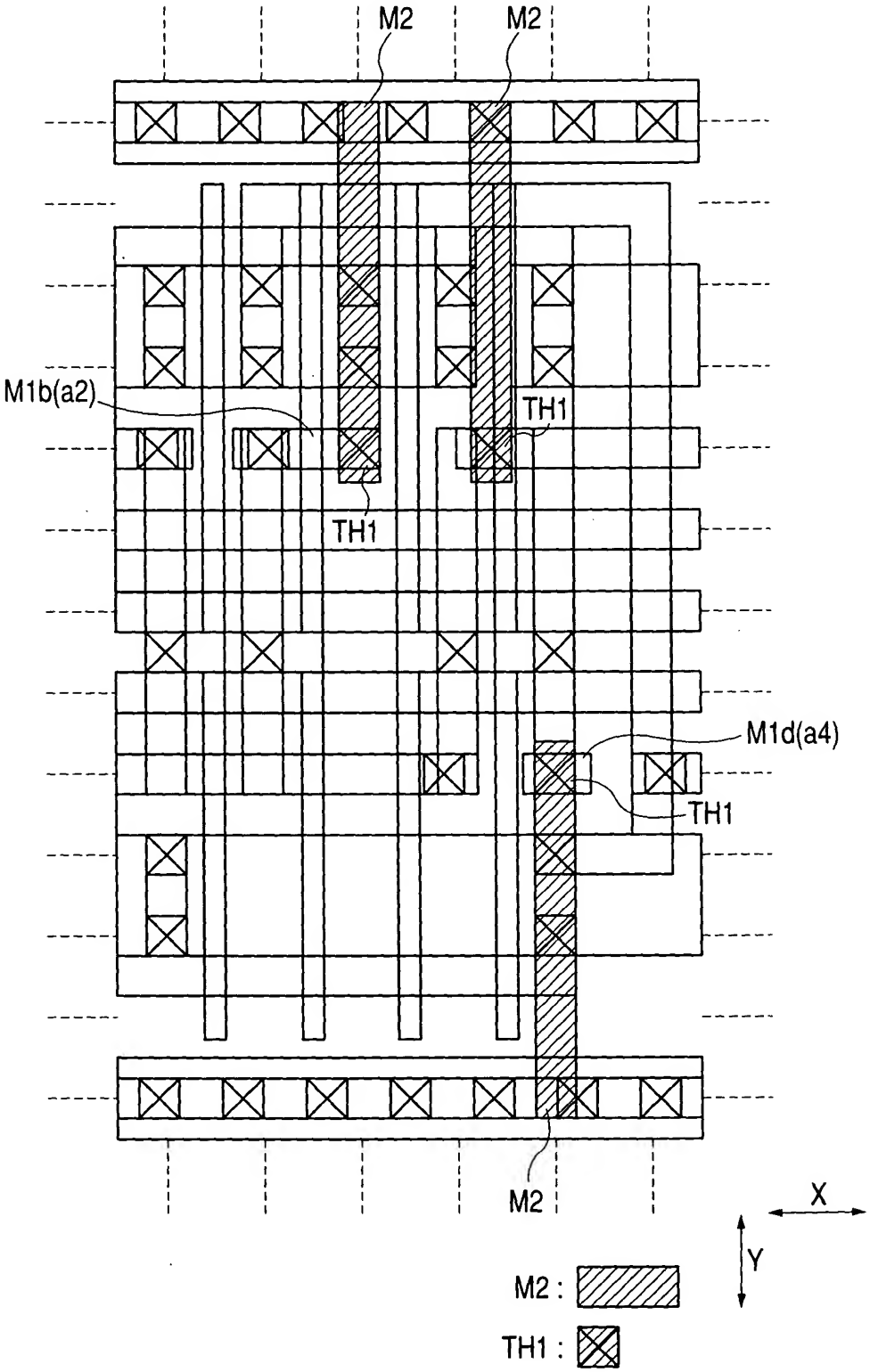


FIG. 36

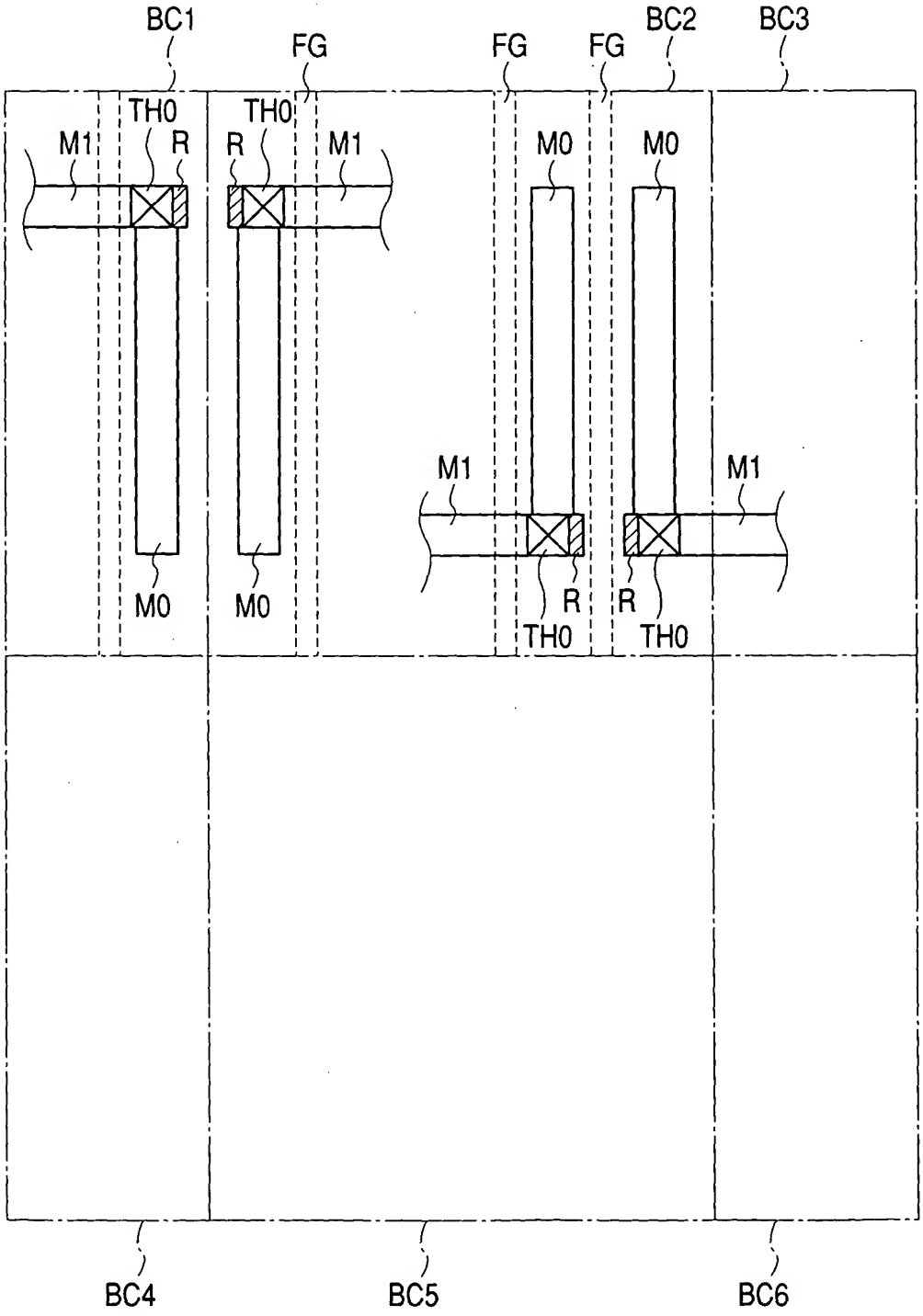

BC1
FG
FG
FG
BC2
BC3
TH0
TH0
M1
R
R
M1
M0
M0
M1
M1
M0
M0
R
R
TH0
TH0
BC4
BC5
BC6

FIG. 37

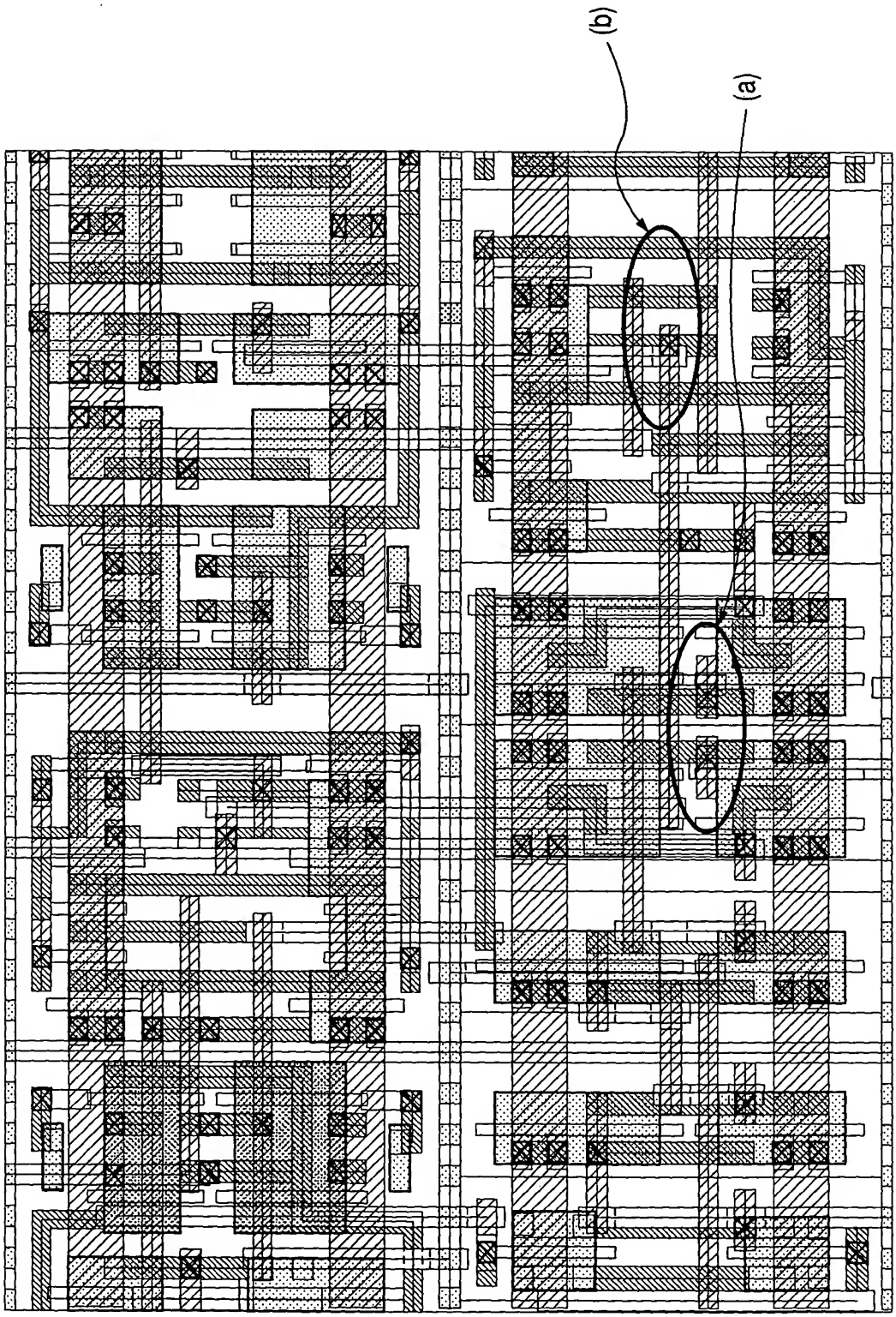
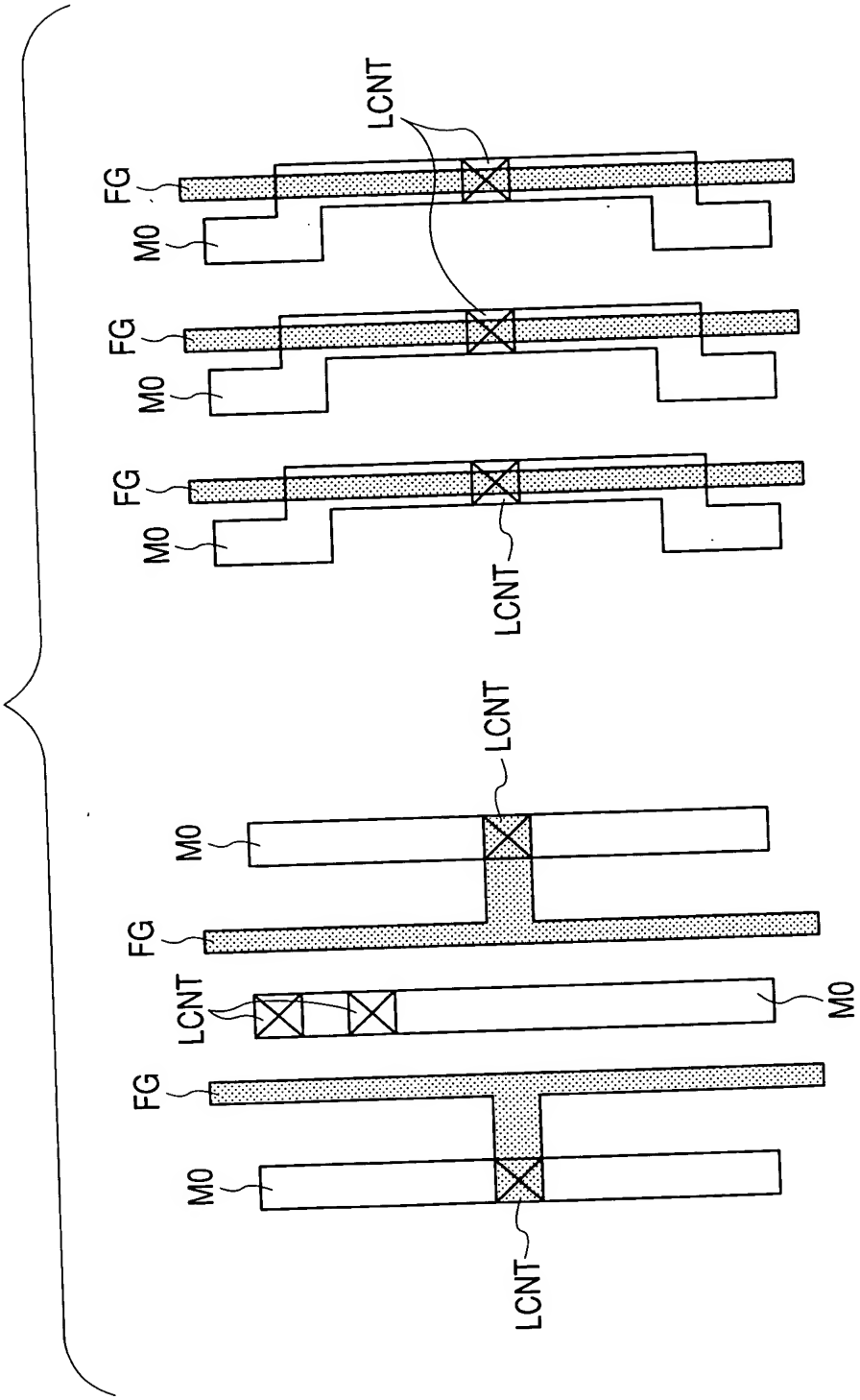



FIG. 38